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Illustrations.

The Hartley University College, Southampton: Design placed First. By Messrs. Clyde Young & Hubert S. East, Architects.

West Street Office Building, New York. Mr. Cass Gilbert, Architect.

Woolworth Building, New York. Mr. Cass Gilbert, Architect.

The South Wind: A Frieze. By Mr. R. Anning Bell, R.W.S.

Mr. Anning Bell, whose paper on "Painted Relief" is reported on page 636, has been called the "English Della Robbia." Mr. Bell is a distinguished and versatile artist whose easel pictures—one of which, a water-colour, was bought by the Chantrey Trustees in 1906—do not represent him completely; the above frieze, for instance, is a recent example of his decorative work, and, in collaboration with several architects, he has given brightness to many important buildings.

THE ARCHITECT AT THE SALON.

An inspection of the architectural exhibits at this year's Salon gives the impression that the wave of what may be called scientific commercialism now passing over Europe has not left untouched even the centre of artistic expression which we have for so long regarded as fixed in the French capital. The schools of Paris have achieved so much in maintaining the standard of architecture that we should greatly regret to find any permanent falling off in this standard. Under the influence of the claims of practical necessities it might well be left to the Teutonic races to attend to these points, for the study of which they are so obviously equipped, while leaving it to the imaginative genius of the French to translate these requirements into artistic form. Of course, we could not advocate any forced specialisation in the functions of the various races, but, now that the intercommunication of ideas is becoming so much more fluent, it would be a grave loss if any national school were turned aside from the course in which it could effect its highest achievements by the distracting claims of other functions which could be performed by peoples equally or even more gifted in these directions, but less so in those that have hitherto been the peculiar province of the French school.

In a book of travels published some seventy-odd years ago we recently happened to light on a criticism of France and its people, to the effect that, having jumped to a large and spacious conception of the philosophy of human life as a whole, they were apt to ignore a mass of details as to the minor conveniences of existence, and this in a measure remains true even at the present day. Romantic ideals, whether in architecture or in anything else, have to be paid for. Other northern races are in the habit of counting the cost and of clipping the wings of Pegasus accordingly. If France adopts the same view its great influence on the art of the rest of the civilised world will be materially diminished. France, or rather Paris, pays, and pays heavily, for the maintenance of its artistic as well as its erotic ideals, but these have their value in all kinds of circuitous ways, and it is almost a duty, in the

comity of nations, to see that the payment is not made heavier than it must of necessity be; for if they are brought into line with those of the less imaginative peoples the international loss will be a great one.

It is for this reason that we hope that the traditions of French art will be maintained and that the apparent tendency towards cultivating commercial efficiency at the expense of artistic ideals is but a passing phase. To be quite candid, there is only the merest indication of it in the architectural work at the Salon, in that we see a smaller proportion of those great compositions, admittedly purely "in the air," and a larger one of executed works far inferior in architectural interest. The ideal compositions of notable merit are indeed limited to two, the design for the decoration of a public square by M. Yvon Maurice Durand, and that for the same subject by M. Gaston Castel. Of these, the former is the more impressive and the architectural treatment of the surrounding buildings superior, though both secure most interesting effects by skilful recessing of the frontages of the buildings fronting the square.

The place is a long oblong with its longitudinal axis running east and west, and streets, running north and south, crossing the two ends. On the north side is placed a large government building with its central feature forming the terminal of a wide avenue, leaving the place in the centre of the south side. Both designs place monumental fountains on the long axis between the main central area and the end streets, and both recess the fronts of the buildings at the ends of the place, forming, as it were, two subsidiary squares on the axes of these end streets. M. Durand has done this more satisfactorily, and various other details in his design are superior to those in that by M. Castel.

Two other elaborate sets of drawings challenge attention, but neither are quite worthy, in architectural quality, of the Ecole des Beaux-Arts. The Yacht Club on the Mediterranean, by M. Georges Migeon, is an ambitious effort in design, but most of the decoration is divorced from structural expression, an unusual fault in French architecture. The design for a Pantheon of Art is far more satisfactory in this respect, but in this case the fault lies in its proportions; attached to a lofty dome is a long building, barrel-vaulted, divided into three bays, nearly square on plan, and terminating in an apse. The side walls of each bay are given up to large decorative paintings representing the principal epochs of art, but from the architect's standpoint this great nave is much too low in proportion for a good internal effect, being only about half the height of the dome, and but little higher than its width.

M. Raoul J. E. Brandon has a very finely-conceived design for extending the old church of St. André at Chartres across the River Eure, with a lofty choir bridging the river, the existing tower, being carried up with a spire, with chapels built out to the east and south. The whole would form a strikingly picturesque composition, well studied in relation to its surroundings.

Among the restorations of antique buildings, M. Henri Prost's work at St. Sophia is by far the most important, occupying almost the whole of the large room; the measured drawings of the building in its present state are rendered with great care and attention to detail, but more enthusiasm will be aroused by the restoration of the building with its surrounding area, and above all by the large section fully coloured, the details of which are based on the Silentiary's poem. This magnificent drawing absolutely glows with the soft golden hues of the Byzantine mosaics, skilfully set off by a deep, vague blue, used to tint the whole of the background to the building. This one drawing is a valuable lesson in the use of colour.

Other restorations include two by M. Guéritte of the Pavillon de la Bossiere and the Pavillon de Julienne, Paris, and an elaborately coloured series of the Trianon de Porcelain by M. Danis, accompanied by some of the original faience work which has been preserved, and which with some old views of the building enables the general scheme to be reconstituted.

The restorations of Greek houses at Delos, by M. Albert Gabriel, work done in the French school at Athens, are valuable, but we cannot help thinking that M. Gabriel has made a slight mistake in the height of the roofs; the columns appear to be drawn out too much, and the careful studies of the existing remains suggest that these should not have been carried to the height shown.

We may note a fine drawing of the porch of St. Germain l'Auxerrois, Paris, by M. Jean Greppi, but with this, and a few other exceptions, the water-colour studies of existing work are not of a high standard.

The principal exhibit from England is a large model of the new front to the British Museum by Mr. J. J. Burnet, accompanied by a number of drawings illustrating this design; otherwise this country is hardly represented, which seems a pity considering that we have a fair amount of work that would undoubtedly be of interest to our *confrères* across the Channel.

Among the paintings are some large decorative works, but nothing approaching in interest that by M. Gaston La Touche last year. The most important monument in the sculpture gallery is that by Mr. MacMonnies for Denver; the groups only are shown, all the architectural setting so essential to the comprehension of the design being omitted.

COLOUR DECORATION.

MR. ANNING BELL, in his interesting paper at the Institute on Monday, preached from a text which has served before now at the Institute and elsewhere, but we doubt that his exhortation will have much effect. Indeed, in the nature of things, in the circumstances in which the various arts have arrived at their present expression, it is far from likely that we shall see during the present generation at least the employment of the arts of architecture, sculpture and painting in perfect unison. Not in England at any rate. Mr. Anning Bell himself to some extent provides the reason; he attributes it to the specialisation of art. To the painter seeking for effects which would scarcely fit in with an architectural scheme; to the sculptor who objects to his modelling, calculated from careful observation of the effects to be obtained from a given surface, being covered with paint. But these, we consider, are largely superficial reasons. Our painters or sculptors possess sufficient talent to adapt their work to a general decorative scheme. Many of them, indeed, are only too anxious to have an opportunity of doing so. There are but few architects, we imagine, who do not personally know the men whom they could call into effective collaboration in the decoration of a building if they were given an entirely free hand. If we go to France we have no difficulty in finding buildings in which the harmony of the various arts is admirably expressed. Take, for instance, the Opera, the Hôtel de Ville, or the new Sorbonne, any or all of which serve to illustrate the unity of the arts, in which artists of the highest individual talent have worked together with a general idea in view. The fact is that it is the wish of the French people, of the man in the boulevards as well as the person in high authority, that such collaboration should exist. And that, it seems to us, is largely the gist of the matter. For some reason which has always left us in the dark, the British Government, the county and municipal controlling authorities, whether they be the London County Council, the City Corporation, or our provincial boroughs, while exploiting almost beyond endurance systems of art education, care little or nothing for the final operation of their systems. And are not our Universities pretty much in the same case? Art is not considered an essential factor in the body politic; it is not regarded as a national and moral asset; its education is encouraged not as one of the main issues in the progress of a nation, but as a subsidiary issue of not very much account. And so it happens that even when our artists themselves meet, as on Monday evening, to discuss the means by which their various arts may be produced in harmonious co-operation, the proceedings are rather distinguished for a detached and academic tone than for enthusiastic conviction that the unity is essential.

So far as colour is concerned, in the painter's sense, there can be little doubt that, apart from its expression in the employment of various materials, the modern architect largely feels that he can do without it. Professor Blomfield, who occupied the chair on Monday, in replying to the discussion, practically said as much. The history of architecture and sculpture from early Egyptian times down to the period of the Renaissance provides many instances in which colour was used; indeed it may be that its use was practically universal in Egyptian and Grecian architecture. There are good reasons for the belief that the Panathenaic frieze was painted; that even the independent statues of the golden age of Pericles were coloured, that

the incomparable modelling of Phidias and Praxiteles was tinted with red and gold! Perhaps we have lost some subtlety of colour sense: but, whether this is so or not, in a modern view, the colouring of marble of an exceptionally fine and transparent quality can only be regarded as an act of Vandalism. The texture of marble, responding as it does to the most sensitive expression of the sculptor's art, to infinite gradations of light and shade, would seem to satisfy the most imaginative, poetic, and abstract demands of modelling. Granted a beautiful material, applied colour becomes more or less a desecration.

But beautiful materials cannot always be employed; materials, that is, which, whether by themselves or by juxtaposition with other materials presented in architectural form, are sufficient for the most exigent colour-sense, and when they cannot be used, coloured plaster relief and other inexpensive forms of painted work might very well come into play. It would certainly be an advantage if the delightful art of such men as Mr. Anning Bell could be more generally employed in the decoration of our buildings. One may be a little uncertain as to the application of colour to external design. It might relieve the monotonous aspect of our streets; but where there is good architecture there should be no monotony. In any case, it would be absurd to dogmatise on a matter which has the sanction of architectural history of the best periods.

NOTES.

Coronation Stands and Public Buildings.

A CORRESPONDENT calls our attention to the danger of fire caused by the erection of the Coronation stands not only to Westminster Abbey itself, but to other public monuments such as St. Martin's-in-the-Fields and St. Mary-le-Strand. We are glad to see that questions have been asked in Parliament as to the precautions to be taken with regard to the Abbey, and we take what comfort we may from the official assurance that they have met with the entire approval of the Chief of the London Fire Brigade. With all respect to such an eminent authority, we venture to suggest that the presence in the Abbey and in its churchyard of such a mass of highly inflammable material constitutes a danger against which all human precautions are vain. Precautions may minimise the risk, but they cannot remove it. It is still there—to insure against it is to admit it. We do not hesitate to say that no conceivable circumstances, no consideration whatever—can justify this risk, but we should hesitate to say that the reasons for incurring it meet with the approval of the more enlightened section of the community. We are not altogether surprised to find that the point of view—more characterisitic perhaps of the earlier part of the last century—from which no suspicion of vulgarity in such proceedings is visible should still be adopted in high official circles. There, as we know, custom reigns supreme, and traditional usage dies hard. Let precedent be followed, though the Abbey falls or God's acre be desecrated. What does surprise us is that if it is still felt to be in conformity with the more enlightened spirit of the age and the solemnity of the time and place to hire out a churchyard by the foot superficial, the worship of precedent should be carried to such an absurd extreme as to involve the traditional use of so inflammable a substance as wood when such modern materials as steel and reinforced concrete would reduce the risk of fire to the vanishing point. If, however, it is considered in harmony with the eternal fitness of things to hide and disfigure the beauty of our national temple just at that precise moment when it should shine in undiminished splendour in the supreme national ceremony enacted within its walls, at least this could be done in such a way as to insure its preservation for those to follow us who will know how to treat it with more fitting respect.

The Natural History and the New Science Museums, S. Kensington.

IT is to be hoped that the difficulty that has arisen between the authorities of the Natural History Museum and the new Science Museum is not incapable of amicable adjustment. In 1890 a certain definite area of site seems to have been granted by the Treasury to allow for the expansion of the Natural History Museum. The complaint is that the new Science Museum will encroach on this area to the serious detriment of the Natural History Museum, which was first in the field, and has the right of prior occupation. All this only serves to illustrate once again the deplorable result of erecting such a large group of public buildings as this—extending as it does from Hyde Park to Cromwell-road—without any general comprehensive plan that would provide adequate space for the future as well as the present necessities of the buildings, and would put some definite limit to the number of buildings to be crowded on to the site. Not one single building is properly placed or provided with an adequate setting, and we suppose the Natural History Museum must expect to suffer with the others.

The Asch Building Fire, New York.

"RED BOOK" No. 155 of the British Fire Prevention Committee deals with the terrible fire last March at New York, where some 145 lives were lost. The fire has, on account of the great sacrifice of life, directed attention to the frequent neglect of the fundamental features of fire protection, and a perusal of the Report will prove instructive. In our metropolis, thanks largely to the London Building Act and its Amendments during the past decade, several features of the New York catastrophe are unlikely to occur in new structures erected as recently as 1901, but, according to a note in the Red Book under notice, "in quite a number of the older buildings where the Act and its Amendments have not yet been fully applied, the same state of affairs is quite conceivable, as also in many of our provincial centres where building legislation is not yet as comprehensive or as thoroughly administered as in the metropolis. We are apt to point to the special risks of the American 'sky scraper,' but the building here under review, with but nine floors—beyond its two basements and ground floor—can scarcely rank as such, and the occurrence would have been equally possible in the three upper stories of a building of, say, seven stories above the ground floor—often met with in Great Britain—as in one where there were nine." Through their Hon. Foreign Member, Professor Ira Woolson, of New York, the British Fire Prevention Committee procured an interesting report, originally prepared for the New York Board of Underwriters by their Superintendent, Mr. F. J. T. Stewart. His particulars are presented in full, the only omissions being his summary and recommendations. Mr. Stewart's report makes instructive reading. Bad planning and exit facilities, neglect of the ordinary precautions to prevent an outbreak of fire, and the absence of any pre-arranged system for utilising the existing appliances, etc., in such an eventuality, and to have all routes of exit clear for immediate and easy use appear to have been the primary causes of the catastrophe. The precise height of the building may have had some bearing on the exact total number of lives lost, but scarcely on the general extent and character of the calamity as a whole.

Devonshire House.

WE hear that Devonshire House, Piccadilly, is to be pulled down. The considerations which have led the Duke of Devonshire to contemplate the destruction of the building are reasonable, no doubt, but the disappearance of so famous a landmark will be regretted by many Londoners. It cannot be said that the mansion, with its somewhat unprepossessing exterior is an architectural glory of much significance, and until the fine gates were placed in position a few years ago the high brick wall completely shut out the view. But as the work of William Kent the building has interest. Devonshire House is supposed to have cost 20,000*l.* to build, including 1,000*l.* to the architect. We have yet to learn the destiny of the site, which is, of course, very valuable; but whether the Duke rebuilds his town house or devotes the land to other purposes the architectural possibilities of the occasion are of much importance.

Holme Park, Sonning-on-Thames.

WITHIN the confines of this estate of nearly 300 acres, which is offered for sale, is the site, still visible, of a palace of the Bishops of Salisbury wherein King John stayed when he met the barons at Runnymede, and wherein Queen Isabel lived during the time of her husband, Richard II.'s, imprisonment in Pontefract Castle. It is said that Sonning was the seat of a diocese when Berks and Wilts were detached from the ancient see of Sherborne, which was established in 704, and, having been limited in 909 to the county of Dorset, was eventually removed to Old Sarum. Holme Park was exchanged to the Crown in 1574, and afterwards passed into the possession of the Palmer family.

C

Water-Colour Sketches.

MR. FRANK LISHMAN exhibits at 12, Gray's Inn-square an interesting collection of his water-colour sketches of subjects of special interest to architects. His more recent work, inspired by an appreciation of the pictorial possibilities of the central district of London, shows a distinct advance in breadth of technique and facility in the management of colour, combined with the accurate drawing and sense of architectural form which characterised his earlier work.

PAINTED RELIEF.

A FORTNIGHTLY meeting of the Royal Institute of British Architects was held at No. 9, Conduit-street, on Monday, Professor R. T. Blomfield, A.R.A., presiding.

Mr. H. T. Hare (Hon. Secretary) announced the decease of Mr. William C. Poole, Associate, elected 1863.

Mr. R. Anning Bell then read a paper on "Painted Relief," the following being an abstract:—

He said that the architect, the sculptor, and the painter have specialised each in his own art in these later centuries and have lost that comprehension of and sympathy with each other's work which characterised them in earlier and happier times, when their object was rather to produce a beautiful piece of work in collaboration than to express each of them his own particular talent apart and aloof from the others. The sculptor thinks that the painter's colour will prevent proper attention to his modelling; the painter is thinking of atmospheric effects all the time, or of values, anyway of realistic imitations of nature of some sort or another, and his mental attitude and training alike render him unlikely to satisfactorily design and carry out a colour treatment which must be subordinate to a general effect designed by another man. The education of our art students was now, he thought, beginning to be directed by a wider and saner policy, and he hoped that soon it would be difficult to find any student who would look with that blank indifference and even contempt on any art other than that which he was studying which characterised many of his own contemporaries. The architect, owing to the difficulty of finding colleagues with whom he can work harmoniously, has been driven to confine his efforts in the direction of colour to such simple treatments as he can trust to the ordinary artisan, and his experiences do not encourage him to attempt anything very unusual or ambitious. These irritating limitations are likely to discourage him and to make him feel disinclined to undertake more than a general supervision of the colour decoration of his building, and so he entrusts the work to one of the firms of decorators who are always at his elbow and who can be trusted to turn out a not unpleasant if not very original piece of work.

As to painted relief, the work was modelled in clay, then cast in plaster, which was then gilded and painted, or a mould was made from which the biscuit or terra-cotta was cast; this was then fired and subsequently also gilded and painted. The work was essentially a colourist's work, and the first sketch must be as definite and careful as one for stained glass. The modelling gives the resulting work a carrying power much greater than painting alone can do, and it must be so treated as to leave a distinct edge to each colour-shape if the colours are strong: this particularly applies to areas which are to be covered with gold or silver. The relief need not be high, in which case the result is more akin, perhaps, to an embossed painting; but it may be so strong that the cast shadows from the layer forms have a prominent share in the composition. When high up, a broad treatment with simple flat planes, with but little modelling properly so-called, may be used with good effect; but near the eye he personally preferred to see the modelling quite thorough and searching. Most workers will agree probably that the modelling takes up much more time than the colouring, though the latter is the dominant factor in a successful result. Painted relief-work may be fanciful and gay, and it may be severe and sober and dignified. Opportunities for work of the latter kind have not been frequent, so that its powers in that direction have been by no means completely demonstrated, and he feared that the associations it brings to mind are rather of the frivolous order, and this is probably one reason why it has not secured more attention; but he was sure that its possibilities for serious and architectonic decorative effect in churches or public buildings are as great as those to be obtained from any other method of wall decoration. It has, too, the advantage of costing less than many, and if desired, by repeating the modelled work and varying the colour treatment a very inexpensive result is obtainable. With proper treatment it should prove very durable; the plaster surface can be hardened, or, still better, the whole may be fired in "biscuit." This is extremely hard, and gives quite a good surface for the colour. True, it shrinks a little and has to be put up in comparatively small pieces. The shrinking was perhaps of little importance, at any rate in work which is designed to be coloured, and the smaller size of the parts is not, he thought, really a disadvantage; it gives a structural look to the work somewhat akin to the leading in stained glass. As to the colouring matter, gold or platinum and the usual artists'-colourman's oil-paints are what he had always employed, and he saw no reason why these should not prove as durable on plaster modelled as on the grounds akin to plaster which are used applied to canvas for the ordinary easel-picture. He showed a small relief which had been for ten years over his own door, facing west and continually exposed to all varieties of weather; it is gilded and painted with cobalt-blue and other colours.

He then dwelt on the potentialities of this material for grave and rich and distinguished decorative treatment. He rather preferred the effect of a low-toned scheme—a sort of subdued gorgeousness which rich colour laid over gold so naturally gives, and he particularly liked it when associated with a good deal of black. Deep blues and greens and full-coloured reds, grave shades of brown or citron, ash-colour and purple, combined with a good "architectural" convention in the

Trocadero Restaurant Decoration.
By Mr. G. E. Moira and Mr. F. Lynn-Jenkins.

Trocadero Restaurant Decoration.
By Mr. G. E. Moira and Mr. F. Lynn-Jenkins.

Frieze in the Trocadero Restaurant.
Designed by Mr. G. E. Moira, modelled by Mr. F. Lynn-Jenkins.

treatment of the figures, may be as readily attained in this material as in any other—by the man whose artistic powers lie in that direction.

Mr. Walter Crane,
in proposing a vote of thanks to the lecturer, said the remarks about the difficulty of different artists working in harmony together at the present day were perfectly true, and one of the main reasons for that was the commercial and economic system under which they existed. They could not alter that, and must do the best they could under the circumstances. With reference to the ceiling which had been shown, designed by himself, the colour there was due to the various kinds of silver, gold, and bronze used. He was reminded of another work where the relief was silver and coloured by means of lacquers, and this was also rather a pleasant method. It was not necessary to depend solely on clay modelling and plaster, but actually to model the thing in a sort of stucco. At the present day there were many clever firms who came along and offered every possible thing from the design of the house to the garden for a fixed price, and they would execute the work in the course of a few months. There used to be people with sufficient courage who actually went to the private artist and asked him to design such things as they had seen that night, but most of these had apparently died, and it seemed that the artists depended for their future prospects on the architects to give them a chance.

Mary Magdalene. Part of Reredos in Park Church, Glasgow.
By Mr. R. Anning Bell, R.W.S.

Mr. Gerald Moira
seconded the motion, and remarked that when he was doing coloured relief with Mr. Jenkins he came to the conclusion that the principal feature in coloured relief was its flatness of modelling, and he thought it required an entirely different treatment from the bas relief. The sculptor who tackled it with the painter had to put himself on a different basis altogether, and treat the thing from another standpoint.

Mr. Lynn-Jenkins
said that ten years ago when he read a paper on the subject he was fired with the ambition to secure from the architect such an amount of appreciation of coloured relief decoration as would tend to make it one of the most vital branches of modern decorative art; but his hopes had been crushed under the iron heel of grim realism. Nevertheless he still held the conviction that colour could be legitimately used and with great enhancement of the effect in sculptural decoration. Mr. Bell was right in saying that coloured relief was a distinct art in which the relation of colour and form must each take its proper part in the result. This required a singleness of purpose rather difficult to be found, and perhaps this was one of the factors against the wide use of this kind of decoration, because the fact remained that there had been no appreciable demand for it in the last ten years. He would like to learn from architects what the strong objection to it was, for evidently there was a strong objection. No one who had studied the glorious Japanese art at Shepherd's Bush could fail to be moved with the wonderful facility and masterly command of colour, and where these great decorative artists showed such a lead, surely they, without any loss of national or other characteristic, could follow in their footsteps. He had heard that architects hesitated to adopt this form of decoration owing to their fear as to its permanence; but properly treated, even plaster would stand the test of ages.

Mr. J. D. Crace
said that in this work much depended on the surrounding and support it was going to have. Architects were often apt to think that they were decorating a building when they put in a certain number of square feet of decorative material or decorative treatment of any kind, but a mere island of decoration was not decoration for a building. One drawback to the use of baked terra-cotta for internal decoration was its weight. Plaster would last as long as most buildings were likely to last, and the work at Hardwicke had lasted already 300 years. The success of coloured relief especially, so far as figure treatment was concerned, really depended largely on the modeller and the colourist being identical, and if there were more men like Mr. Bell, who combined the two, then coloured relief would become a more valuable form of decoration.

Mr. Maurice B. Adams
alluded to the state of the plaster work in the partially demolished house in front of Hardwicke Hall as evidence of how it would stand even when exposed to the weather. He thought there was no possible doubt that stucco was one of the most durable materials they had. As an illustration of the objections architects had to colour of the class shown, the speaker referred to the reredos by Alfred Gilbert at St. Albans Abbey, and said to him the whole thing was incongruous with its surroundings, although, judged by itself it might be a beautiful thing.

Mother and Child.
By Mr. R. Anning Bell, R.W.S.

Mr. H. H. Statham
pointed out that one of the most remarkable examples of colour applied to sculpture was the Parthenon frieze, although how far it was coloured they could not say. In the use of colour to relief sculpture it was important to keep it in low relief, for if they had it in too high relief the colour made it look too realistic. There was a rather unfortunate example of that in Waltham Abbey, either designed by Burges or put there under his direction.

The Chairman
agreed with Mr. Crane that the hope of the artists lay in the architects, but the artists must recognise that the architects also were artists and had an art of their own; and they had also very definite limits not always compatible with those of painters and sculptors. Sometimes it was necessary for architects to turn their backs on painters and sculptors. They knew the Greeks used coloured sculpture, and it was also used in the Renaissance, but the evidence showed that it was used in distinct subordination to architecture. He took it that Mr. Bell would go further than merely pick out the background of a frieze to emphasise the points that sculpture did not show off. Mr. Bell would extend the range and area of painting by combining with it modelling that raised a very wide question. His own view, as an old-fashioned person, was that it was time they paused in their headstrong career and considered how far it was really possible to combine the arts. It seemed to him, as a purist, rather like the attempt to remodel the opera which had ended in a dismal failure.

The vote of thanks having been heartily agreed to,

Mr. Anning Bell,
in reply, said all he asked was that they should work as the assistants of the architects, although in some cases, when they were doing small things, they might carry them to a more subtle and elaborate extent.

ST. PAUL'S BRIDGE.

The following resolution has been passed by the Council of the Institute:—

"That this Council, having considered the evidence offered to Parliament in support of the scheme of the Corporation of London for the construction of a new bridge near St. Paul's to be known as St. Paul's Bridge, is unanimously of opinion that, if it is carried out as now designed, a great opportunity for the architectural improvement of London will be irrecoverably lost, and that a scheme of such importance ought not to be sanctioned by Parliament until it has been approved by competent artistic authority."

HARTLEY UNIVERSITY COLLEGE COMPETITION, SOUTHAMPTON.

THE first thing that occurs to us on glancing round this exhibition is that the competitors seem to have taken different views of the precise meaning to be attached to the term University College. Some seem to place the accent on the University, and show the departments arranged in separate buildings with carriage drives between them; others place it on the College and, connecting their departments, group them as a single building round one or more quadrangles, while others again endeavour to compromise with varying degrees of success.

Judging from the result of the competition, Hartley University College is a college, not a university, and the qualifying adjective seems to refer to the standard of education, but does not appear to denote any such difference in educational methods as would demand any wide departure from the general idea and traditional arrangement of a college without the prefix "university."

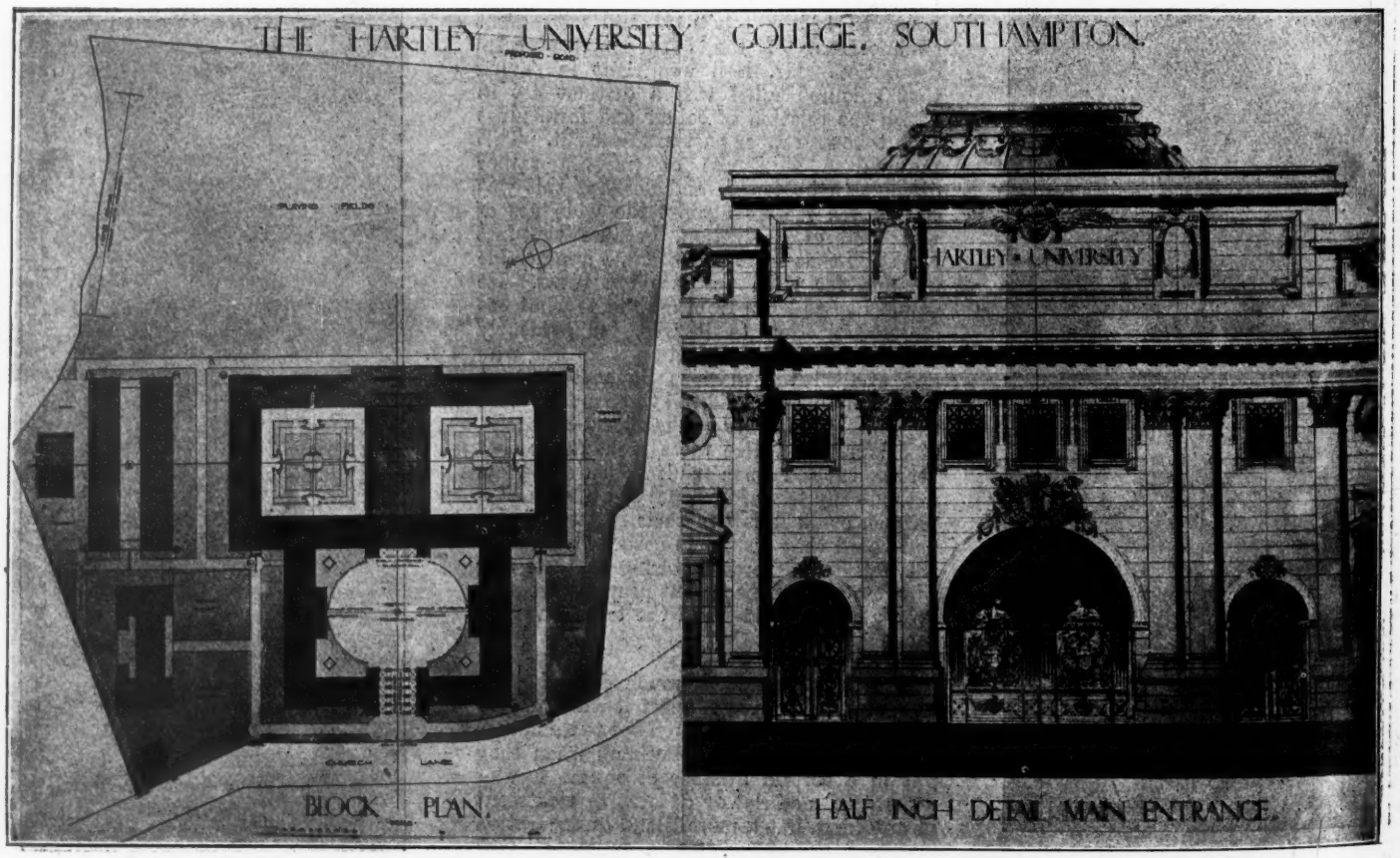
There is little doubt that the traditional arrangement of colleges attached to universities was influenced largely by the fact that they were residential as well as educational. The lodgings of the tutors and scholars were grouped round enclosed quadrangles as much for disciplinary as for educational purposes, and produced the semi-domestic appearance so much admired in our ancient universities.

Hartley University College, not being residential, these conditions no longer apply, and there seems to be no particular reason why these traditional arrangements should be followed, and non-residential class and lecture rooms grouped round quadrangles and infused with the domestic sentiment which is no longer characteristic of their interior, and made to look as much like students' lodgings as the circumstances permit. As the selected designs follow more or less this traditional plan, it is to be presumed that the assessor is of opinion that the advantages of so doing are other than sentimental.

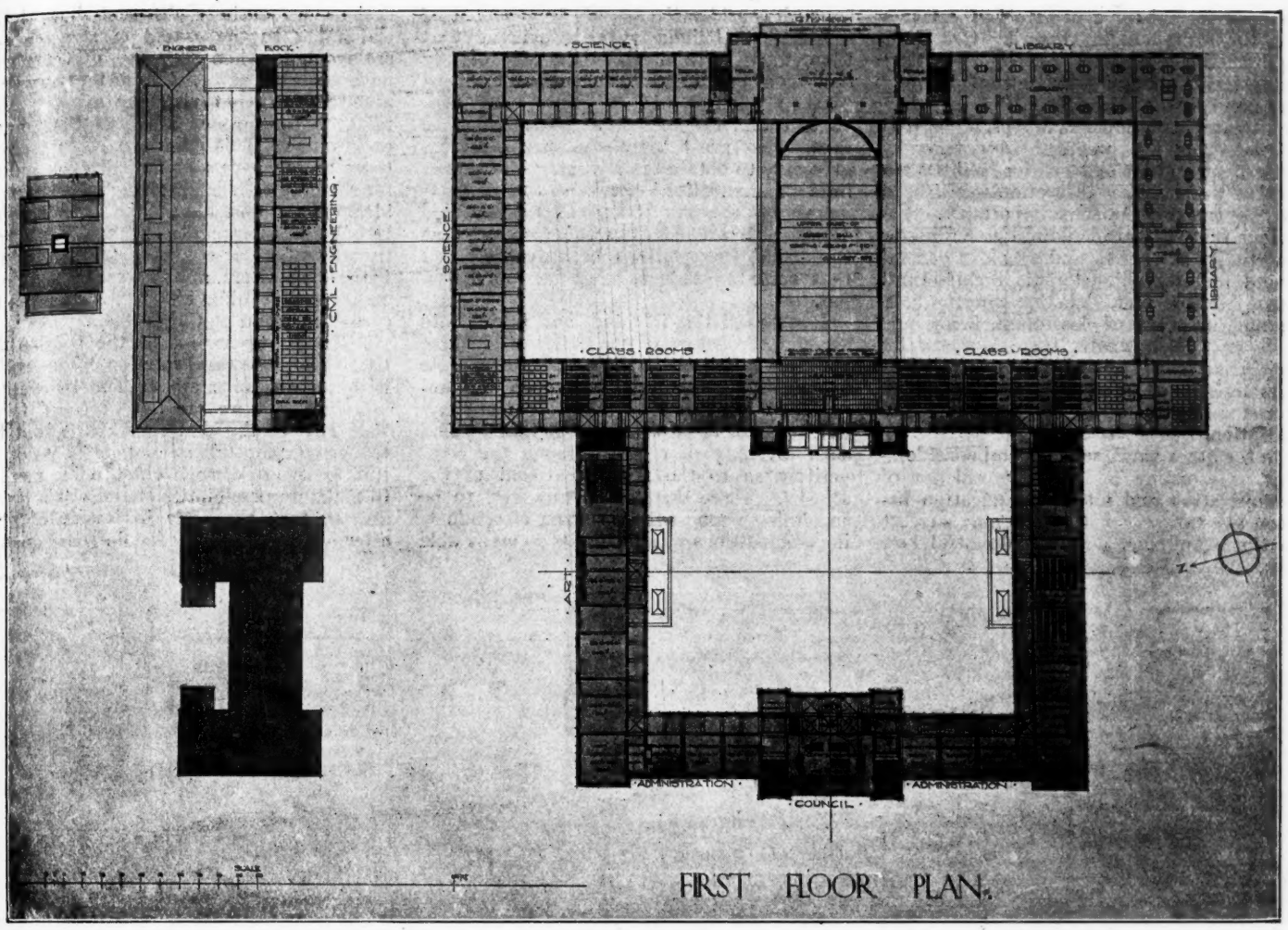
If we endeavour to approach the consideration of this subject from the point of view of the artistic expression of modern requirements and without any reference to the traditions of mediæval residential colleges, we find that the accommodation consists of several more or less independent departments for the teaching of different subjects, and of certain halls or rooms—such as the great hall, museum, library, and administration, which are common to all. As these latter rooms represent what we might call the corporate life of the college, the most obvious idea would be to group them together to form the central and dominant feature, and to arrange the various teaching departments in subordination to them, isolated or not as convenience dictates, and in such position as might best express their differing natures and functions. The general rooms would represent the university buildings, the teaching departments forming the colleges, and the whole would give a grouping and general arrangement expressive of our modern system of education.

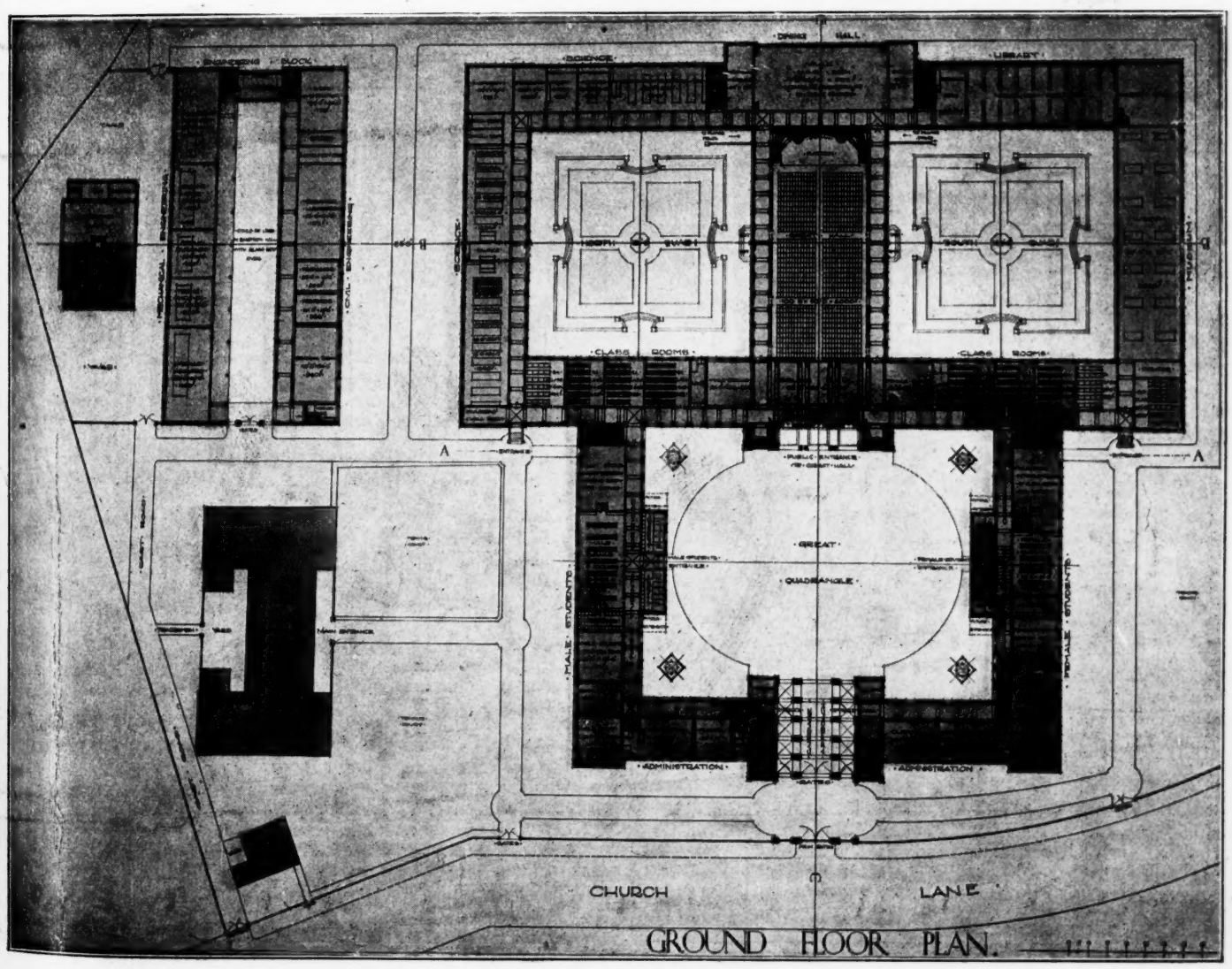
If, however, all the accommodation is grouped together in a single building, it has the disadvantage that each hall or each department has to make some sacrifice of convenience and general utility for the sake of the general effect. No department can be given just the perfect arrangement and precise shape dictated solely by its own nature and requirements, which otherwise it might receive. A compromise is the best that can be expected, and although this may be usual in certain types of buildings, it is just a question whether it is necessary here.

In the selected design by Messrs. Clyde Young and East, this compromise is skilfully effected, but it is none the less a compromise. The general shape of the biology or engineering departments, for instanee, however well they may be planned, is dictated more by



Competition for the Hartley University College, Southampton: Design placed Second.
By Mr. Edwin Cooper, F.R.I.B.A.





Competition for the Hartley University College, Southampton: Design placed Second.
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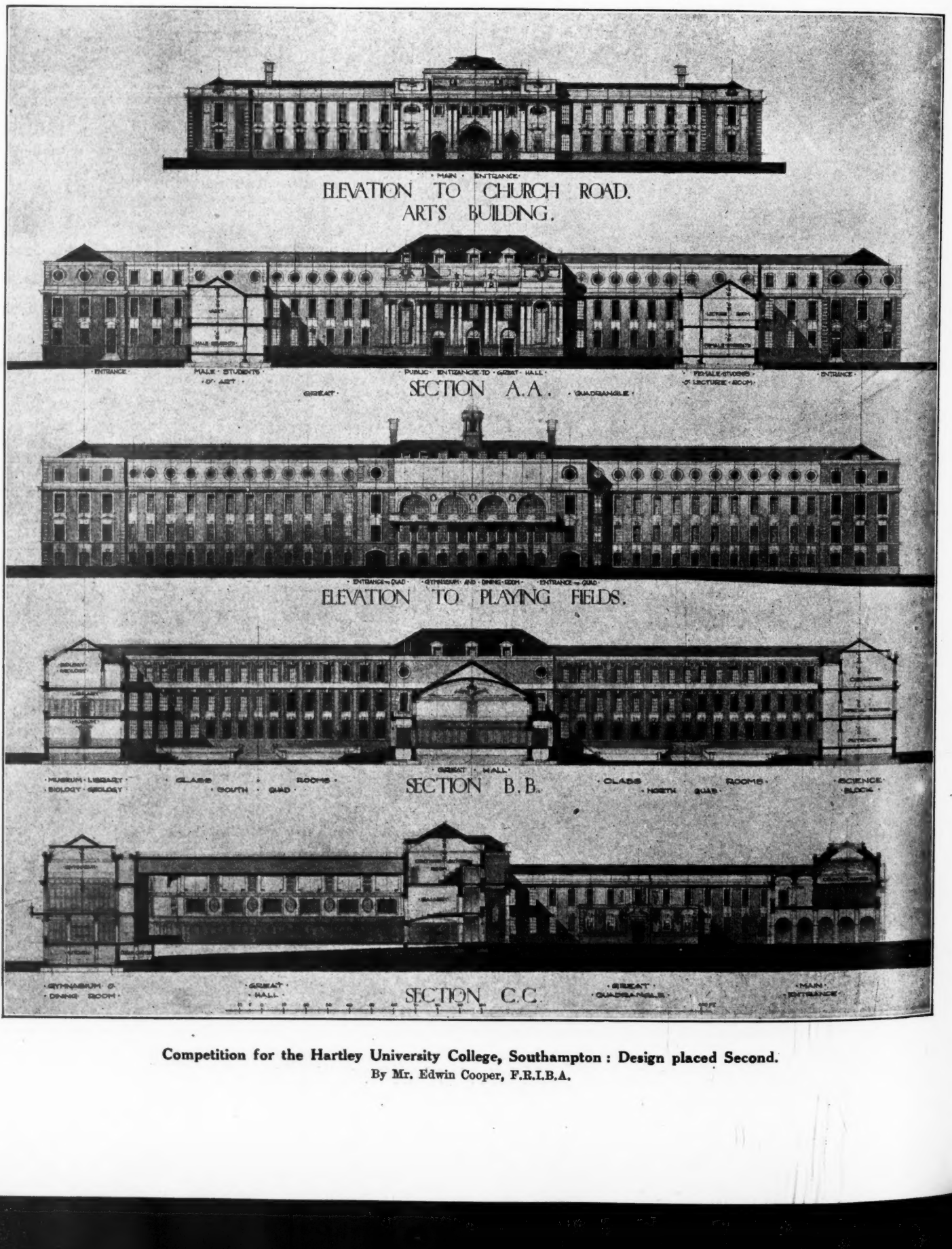
the need for proper access to and relation with the main building than by their own requirements. Neither their practical arrangements nor their architectural grouping is as perfect as it might have been had they been treated as isolated buildings.

Apart from the practical advantages of better light and air and greater facilities for erecting the building in sections—which in this case is a point of some importance—it is obvious that separate buildings give a better opportunity for a fine and spacious general lay-out and for characteristic architectural design. Each unit, whether great hall, museum, or group of classrooms, being able to develop itself freely, there is naturally more chance to obtain the exact effect characteristic of it—so giving expression, interest and variety to the complete conception.

On the other hand, such general considerations as economy and the convenience of administration and intercommunication between the various departments may suggest the single building, but it is doubtful how far such considerations apply to so large and scattered a building. It is evident that there must be a limit to the size of any individual building, and that a point will be reached when it will be really more convenient and economical to create separate ones. The great length of the corridors necessary to obtain the advantages of proper intercommunication between the departments on the two floors of the selected design, or in that placed second, suggest that this point has perhaps been reached and that some advantages may be too dearly paid for.

Bearing all this in mind, and taking into account the nature of the building which so readily lends itself to division into separate buildings, together with the open and unrestricted site which permits a spacious lay-out, it is not to be wondered at that we find such diversity of opinion among the competitors as to the right treatment of the scheme. There does seem, however, to be something wrong with a system of conducting competitions which permits so many able designs on entirely different lines to be elaborated to the extent of showing ¼-in. scale details when so many of them must have been out of court from the very start, according to what view the assessor might take of the proper interpretation of the programme. This seems to be just one of those cases where a preliminary competition for sketches to a small scale giving a general idea only would have saved much useless labour and disappointment, and would have the advantage of confining the attention of both competitors and assessor to the discovery of the ruling idea which would be the correct solution of the problem.

Although we incline to the opinion that the best architectural solution of the problem is by means of more or less independent buildings, yet we are not prepared to say that any of the designs which adopt this treatment take full advantage of its opportunities or are of such outstanding merit as to make its possibilities obvious at a glance, and so turn the scale in favour of what, after all, may be regarded in some quarters



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as being somewhat in the nature of an experiment.

But whatever treatment may have been adopted, it seems that few of the competitors have been very successful in grouping their buildings in accordance with any general ruling idea. Where such a building as this has accommodation common to all departments, convenience suggests that it should be placed in a central position equally accessible to all parts of the building. If the building be set out on an axis, some point on this axis seems the natural position for the great hall, the library, museum, and administration. In the selected designs the administration and the great hall are centrally disposed, but the library with museum over is on one side of the quadrangle, where its convenience for two wings of the building is only equalled by its inconvenience for the other two. The position of these rooms is hardly in keeping with their importance. They exercise no more influence on the general conception of the plan than the range of classrooms which balance them. This involves a loss of characteristic planning and architectural expression.

These two excellent designs and others on the same lines seem to lose something of the characteristic and expressive effect which might have been produced by placing each of the main units in a position in accordance with its dignity and functions, and to be handicapped by a too rigid adherence to the traditional form of the quadrangle.

By treating the large quadrangle as an entrance approach to the great hall, Mr. Cooper contrives to lead up to and give more importance to the position of his dominant feature, but it would have gained in expression if it could have been supported by the library and museum, as it is shown in the pleasing design by Messrs. Unsworth, Son, and Triggs. In this case, however, this idea is not very well worked out in detail, and seems to need completion by reversing the position of the administration and the block devoted to biology and geology, which latter, as the main entrance block to the quadrangle on the central axis, seems to occupy a position out of proportion to its relative unimportance.

Mr. W. G. Wilson places both hall and library on his main axis, but they cut the intercommunication, and lead to the main entrance being placed on one side of the quadrangle.

Where the competitors have adopted separate buildings advantage might have been taken of the freedom of arrangement such a treatment permits to obtain a more expressive grouping, yet in the design by Messrs. A. W. S. Cross & George Hubbard, for instance, so admirably worked out in detail, with the exception of the administrative block and great hall no special effort has been made in this direction, as is noticeable, for instance, in such designs as that by Messrs. Davidson & Simkins, where an octagonal hall is the central feature of a group of monumentally designed isolated buildings, arranged round a court and connected where necessary with covered arcades.

The influence of tradition is noticeable in the elevation as well as in the plans. Messrs. Clyde Young & East, and Messrs. Unsworth, Son & Triggs, for instance, follow tradition in both respects, and so perhaps obtain a certain unity of conception. Mr. Cooper, Mr. W. G. Wilson, and others follow it in plan and depart from it in elevation. Messrs. Cross & Hubbard break away from it in plan, but return to it in elevation. Messrs. Davidson & Simkins and Messrs. Thornely & Rooke, and others break away altogether, and make genuine attempts to deal with modern requirements in a modern way, and we must say that whatever their defects they interest us accordingly.

The designs by Messrs. Albert Moore & Alan Munby, by F. J. Lucas, and by Messrs. A. F. & R. F. Gutteridge are able compositions, raising points of principle with which we have not space to deal.

GENERAL NEWS.

The Architectural Association Excursion.

The Committee of the Architectural Association have decided that the annual excursion this year shall be to the valley of the Loire, from August 11 to 19. It will include most of the castles and chateaux of Tours, rich in varied and historical work. The party is limited to thirty, and exceptionally moderate terms for the journey have been made. The cost of the excursion, including hotel expenses, local railways, and motor fares, will be 8*l*. In order to secure tickets early application is invited. The Hon. Secretaries for the excursion are Mr. W. Talbot Brown and Mr. A. W. Hennings.

Stands for the Coronation Processions.

The Westminster City Council is, we understand, prohibiting the erection of stands over the pavement lights.

Honour for Sir Aston Webb, C.B., R.A.

The King has made the following appointment to the Royal Victorian Order:—

To be Commander.

Sir Aston Webb, C.B., R.A.

Capt. Cook's Statue.

Sir Thomas Brock, R.A., has received from the Committee for the erection of a statue to Capt. Cook in London a request that he will design and execute the memorial, and he has accepted the commission.

The London King Edward Memorial.

In the House of Commons on Monday Mr. Douglas Hall asked the Prime Minister whether he would make it a condition to the granting of Crown land, either in Hyde Park or elsewhere, for a site for the memorial to King Edward VII., that the plans or the designs of the proposed memorial should be selected after open competition, and that the greatest possible portion of the work should be British; and that upon the committee of selection the Government or the House of Commons should be represented.—Mr. Dudley Ward, in reply, said: This memorial was initiated as the London memorial to his late Majesty, and his Majesty's Government have made no contribution to it. The subscribers have elected a committee, of which the Lord Mayor is Chairman, to make recommendations with regard to the site, and the form of the memorial. It would be difficult for his Majesty's Government to interfere with the work of the Committee unless or until the Committee bring forward some proposal which may affect the property of the Crown or of his Majesty's Government.

The Design for the Great Seal.

Lord Halsbury, presiding on Monday at the annual meeting of the City and Guilds of London Institute at the Mercers' Hall, said that the most important event of the past year was the granting of the supplementary charter which enabled the Institute to co-operate more effectively with the Imperial College of Science and the London County Council. Referring to a falling off in students in some departments at the Finsbury College, Lord Halsbury said that it was not the quantity so much as the quality of the students, and their work, that was of consequence. He understood that the design for the new Great Seal of Great Britain and Ireland had been placed in the hands of a former student of the College, Mr. Gilbert Bayes, who had for some time also been a teacher of modelling there.—*Times.*

County Mansion Fire.

Sledmere, near Malton, the residence of Sir Tatton Sykes, has been destroyed by a fire which broke out in the kitchen. Only the walls were left standing. The fire brigades of Malton, Driffield, and Scarborough turned their attention to saving the valuable art treasures in the house—including pictures by Romney and others, and Adam furniture. Most of the works of art were got out in time, including a statue of the Apollo Belvedere, which stood at the entrance. The greatest loss was the library, which was 110 ft. long and 30 ft. wide, with two Adam mantelpieces, and contained a valuable collection of books, some of which were destroyed. In the drawing-room the decorations were all in Adam style, and the ceiling had a number of painted medallions let into it. The house and its contents were insured. Sledmere was designed and erected by Rose in 1780.

The Chapel Royal, Stirling Castle.

At the annual meeting of the Scottish Ecclesiological Society, held on Monday, in Edinburgh, a letter was read from his Majesty's Office of Works on the subject of the suggested restoration of the Chapel Royal, Stirling Castle. The Board stated that, while they were most anxious to take all possible means to preserve the historic buildings in their charge and fully sympathised with the feelings of the memorialists as to the present use of the chapel, they feared that there would be great practical difficulty in giving effect to the prayer of the memorialists. In the Board's opinion satisfactory restoration was not only impracticable, but was to be deprecated. Restoration was undesirable from an antiquarian standpoint, because there were no remains of the ancient roof which would be a guide to the design of the original roof, and therefore the term "restoration" could never properly be applied to such new roof. It would be little or no advantage for the building to be cleared of all internal modern floors, partitions, etc., in order to expose bare walls and a modern ceiling or roof. Restoration was impracticable unless the castle was abandoned as a military station. If the present space was relinquished a new building or buildings would have to be provided at considerable cost, and for such buildings there was no room within the walls of the castle. Even if space were available, the erection of further modern military buildings would be more objectionable than the present use of the Chapel Royal.—*Times.*

Fires in Shops.

In the House of Commons on Monday, Mr. Wedgwood asked the President of the Local Government Board whether his attention had been called to the dangerous fire which occurred recently in a film shop near Charing Cross; and whether any steps would be taken to prevent such shops being placed on the ground floor beneath rooms where people sleep or are employed in large numbers.—Mr. Churchill replied, and said: I will communicate with the London County Council in this matter. The Home Office has more than once suggested that it would be desirable that the Council should obtain power to deal with this danger; and I have no doubt the Council will consider the question of applying to Parliament for the necessary amendment of the London Building Acts.

Hospital Arrangements.

In the current number of the *Hospital*, Mr. E. T. Hall discusses the arrangements of a complete ward unit for a modern hospital. He considers that in a large general hospital from twenty-five to twenty-seven beds in the unit is a satisfactory number, that 27 ft. is sufficient width for the ward, and that beds spaced with centres from 8 ft. to 10 ft. apart leave adequate space for the staff. The height of such a ward he suggests as not less than 13 ft. 6 in. to avoid the depressing effect of a low ceiling, and he thinks that if the ward is arranged for convenience and good light and air the question of cubic space per patient, about which so much has been written, will settle itself automatically. He gives good reasons for preferring to heat the ward with an open fireplace at the end and radiators under the windows, rather than with the central stoves so often used, and has useful suggestions to make as to the sanitary and other accessories of the ward. His remarks are illustrated by a plan.

Lamp Standard Clock at Marble Arch.

A public clock is being presented to the Borough of St. Marylebone by Mrs. Mocatta, of Great Cumberland-place. It consists of two large dials facing east and west fixed upon an arc lamp standard in Oxford-street, opposite the end of Park-lane. These dials are operated by an electrical time transmitter contained in a cast-iron pillar on the refuge. This instrument receives an electrical impulse every hour from Greenwich Observatory and transforms it into the half-minute impulses necessary to propel the hands of any number of clock faces. It does this quite automatically, so the clock never requires to be wound up. Though clock faces have, as yet, only been fixed to one arc-lamp standard, there is no reason why a pair should not be

mounted on every lamppost down the street, as the controlling mechanism will operate any number, and the dials themselves are ideally simple, the only works they contain being one wheel and an electro-magnet. The work has been carried out by the Synchronome Company on the system invented by Mr. Hope-Jones, who has been advocating municipal time service for many years.

Stained Glass.

A two-light window has recently been erected in the side chapel at St. Mary's Church, Albert Bridge-road, Battersea, the gift of Miss Deacon in memory of her mother. The subjects represented are "The Presentation in the Temple" and "Our Lord among the Doctors." The work has been designed and executed by Mr. H. G. Murray, of Britannia Studio, Caroline-street, Eaton-square, London.

The MacWhirter Exhibition.

The opening of the Exhibition at the Leicester Galleries of 100 water-colours by the late John MacWhirter, R.A., is fixed for Friday next. The collection will include drawings executed in Scotland, Italy, Switzerland, and elsewhere. Archdeacon Sinclair will contribute an appreciation to the catalogue of the Exhibition. There will be shown at the same time a series of sixty landscapes in oil and water-colour by H. Hughes-Stanton, A.R.W.S.

COMPETITION NEWS.

Leicester Public Hall.

In November last the Town Council decided to offer premiums for a design for a hall or park pavilion to be erected on the Regent-road site adjoining Victoria Park. Messrs. S. Perkins Pick, F.R.I.B.A., and E. G. Mawbey, Borough Surveyor, were appointed assessors to examine the designs sent in, and their awards have just been approved by the Committee. Messrs. Stockdale Harrison & Sons have been awarded the first premium, Mr. H. H. Thomson the second, and Messrs. Langley & Baines the third. The Committee will shortly meet again further to consider the plans.

A Country House.

The *Daily Mail* offers a prize of 100*l.* for a design for an ideal country house to cost 900*l.* to 1,100*l.*, but not to exceed the latter amount exclusive of architect's fees.

The accepted design, as well as all the others, will remain the property of the authors, but the *Daily Mail* reserves the right to publish any of the designs in any form, and further to erect a house to correspond to the accepted design at the Ideal Home Exhibition, at Olympia.

The award will be made to the author of the design which best expresses the art of architecture with due regard to convenience and comfort by a jury of two well-known architects, two ladies interested in domestic architecture, and Mr. W. G. Tarrant (who will subsequently build the house), whose decision shall be absolutely binding and final on all competitors.*

The *Daily Mail* reserves the right to withhold the award should it be the opinion of the assessors that a high enough standard of design has not been obtained to justify it.

Building regulations are so diverse and unsatisfactory that they may be disregarded, but competitors will be expected to have regard to all essential conditions as to proper sanitation and sound construction.

The site of the house should be taken as 66 ft. square, but the house is to be entirely detached, and the site may be assumed to be level. The points of the compass must be indicated.

No design will be assumed to be built at a possible cost of less than 7½d. per cubic foot, exclusive of drainage and any outside work, such as fences, etc.

Measurements clearly showing how the cube is arrived at must accompany the design.

Drawings are to be to a scale of one-eighth of an inch to one foot, executed in black ink on white paper, and limited to two imperial sheets mounted either on cardboard or strainers without borders; none are to be framed or glazed. The essential plans are :—

(1) A plan of each floor.
(2) A section through the building each way.
(3) Front elevation.
(4) Side elevation.
(5) Back or garden elevation.

Perspective views are optional.

Plans to be coloured in the usual architectural manner, but elevations are to be in black and white only. If perspectives are sent they may be tinted to represent the natural colour of the intended materials.

A specification as ordinarily understood is *not* to be sent, but a brief description or summary of the constructional materials the competitor proposes to use in carrying out his design is to be submitted.

All designs published will contain the name of the author, unless expressly otherwise wished by the respective competitors.

The prize winner will afterwards be required to furnish detailed specification and half-inch detailed drawings, and to supervise the erection of the house at Byfleet or Woking, for which services the usual commission of 5 per cent. plus travelling expenses will be paid.

Each competitor must state that the design is his own work, and that the drawings (with the exception of the perspective drawings) have been prepared either by himself or by his staff under his own supervision in his office.

Each set of drawings and the accompanying description of materials must be sent in anonymously, accompanied by the envelope supplied containing the author's declaration, name, and address. When each package is unpacked, it and each of its contents will be marked by the promoters for identification, but no distinguishing mark, motto, or device is to be put on the drawings, description, statement, envelope, or package by the competing architects or their agents.

The design of each competitor must be sent in not later than July 31 (carriage paid), addressed to the Manager, "Architects' Competition," *Daily Mail* Offices, Carmelite House, London. Each package must be marked "Architects' Competition."

Any question as to this competition must be made before June 30, 1911, and to be addressed to the Manager, "Architects' Competition," *Daily Mail* Offices, Carmelite House, London. Replies to such queries (if any) will be sent to every competitor, after which no further questions can be answered. Such replies shall be read as forming part of these conditions.

Designs will be excluded from competition :—

(*a*) If sent after the date named (unavoidable delay in transit being excepted).
(*b*) If in violation of the instructions.
(*c*) If any competitor attempts to make known his identity or to influence the decision of the assessors personally or in any other way.

Architects sending in designs shall be held to accept and be bound by these conditions and instructions.

In case of any dispute regarding the meaning of these conditions between the promoters and the competitors, the same shall be referred to the assessors, whose decision shall be binding to both parties, and without appeal.

* See a letter from the promoters on p. 643.

BOOK RECEIVED.

CIVIC ART. Studies in Town Planning, etc. By T. H. Mawson. (London: B. T. Batsford. 2*l.* 10s. net.)

CORRESPONDENCE.

Coronation Stands.

SIR,—I don't know what you think of the very great danger, apparent to the merest casual observer, to our priceless and historical buildings in London, surrounded as they are at the present time by a forest of highly-inflammable wood, etc.

It makes one tremble for the safety of our historical Westminster Abbey, stuffed with the same material inside, and surrounded with it outside.

Surely it is high time something was done to prevent these stupid risks. In no other country in the world would it be permitted but England, which is asleep, as usual, to the terrible danger allowed to grow and be continuously added to for the next thirty-six days or so.

Cannot you sound a warning note, and have the forests of wood rendered fireproof.

If not, an army of firemen, with water and every appliance, ought to be kept on duty night and day until the danger can be permanently removed, and it ought never to be allowed to recur in these enlightened days.

One can understand a hospital or other such building endeavouring to "raise the wind" by erecting a stand on its property, but what about Parliament-square? Who gets the proceeds from the huge structures erected there?

A CORRESPONDENT.

*** See our comments on p. 635.—ED.

Crittall Manufacturing Company *v.* The London County Council.

SIR,—The decision of Mr. Justice Channell in the case of The Crittall Manufacturing Company *v.* The London County Council, recently reported, is one of first importance to subcontractors. Hitherto, the legal position was that although the work done or services rendered by the subcontractor were for the sole benefit of the building owner, he, nevertheless, had no claim against the building owner apart from agreement express or implied, and was forced to look for payment to the contractor. Such general rule is based on the principle that no one not a party to a contract can sue on it, and, therefore, the subcontractor of a builder or contractor cannot sue the building owner because there is no privity of contract between them (*vide* "Chitty on Contracts"). Many cases are reported wherein it has been decided that the mere fact that the employer accepted the work and materials supplied by a subcontractor is not sufficient to establish an implied contract between such employer and subcontractor (*vide* Bramah *v.* Lord Abingdon, cited in Paterson *v.* Gandasequi, 15 East 66; Eccles *v.* Southern, 3 F. and F. 142; Boulton *v.* Jones, 27 L. J. Ex., 117). It is true that in Hobbs *v.* Turner (18 T. L. R., 235) Kennedy, J., held the building owner liable to pay the subcontractor for certain metalwork supplied by the latter, which had been included in the contract as a provisional item, and had been approved and ordered by the architect employed by the building owner. But in Hobbs *v.* Turner the contract provided that all provisional items were to be payable by the contractor or by the employer, and the architect had, in fact, sent to the plaintiff subcontractor a certificate addressed to the defendant employer, and not to the builder, certifying the sum which the plaintiff was entitled to receive for the ironwork he had supplied.

The following are the principal facts in the case Crittall Manufacturing Company *v.* London County Council :—

A firm of builders contracted with the London County Council to erect certain school premises in accordance with plans and specification for 24,996*l.* The contract provided in certain circumstances for sub-letting, and the Education Committee of the London County Council reported that the builders should be authorised to sublet certain ironwork. The Architect of the London County Council formally invited quotation from the plaintiffs, intimating that they were to be addressed to him at Spring Gardens, that he had a discretion to accept any part of the quotation, that working drawings could be seen at his office, and that the builders would allow the plaintiffs reasonable use of their scaffolding. By direction of the defendant Council the builders placed the order for the ironwork with the plaintiffs.

Numerous other communications passed between the builders, the London County Council, and the plaintiff subcontractors.

When the plaintiffs had received two instalments amounting to 447*l.* 3s. 4d. from the builders, the latter became bankrupt on their own petition, and a special manager of their estate was appointed. The manager stopped the plaintiffs from delivering any more goods to the bankrupt builders, and the same day the plaintiffs informed the defendant Council that they proposed to complete their sub-

contract; a week later they informed the Council that they would look to the Council for payment, but the London County Council refused to accede to this position. Shortly after, however, the defendant Council intimated to the special manager that they would not determine the contract with the building contractors. The plaintiffs brought this action claiming a declaration that a contract was made between the plaintiffs and the London County Council by the invitation for a quotation, the quotation by the plaintiffs and a letter from the builders to the plaintiffs ordering, at the direction of the London County Council, the work quoted for.

The defendant Council contended that the documents did not amount to a contract; that the builders were not agents of the London County Council; that the plaintiffs by accepting two instalments had elected to treat the builders as their debtors; and that there was no contract under seal. Channell, J., in a long judgment, held that, although the contract was *primâ facie* with the builders, it was also a contract made by the builders acting as agents on behalf of the London County Council as real principals, because it was to procure something for their benefit.

It is a pity, in the opinion of some, that this decision was not taken to the Court of Appeal for review, but until it is overruled it doubtless will be followed by judges of first instance. It will be received with the greatest satisfaction by all subcontractors, who not infrequently find themselves "betwixt the devil and the deep sea."

F. ST. JOHN MORROW, LL.D.
3, *Dr. Johnson's Buildings,*
The Temple, E.C.

Unity in the Architectural Profession.

SIR,—Perhaps I may be allowed your further courtesy to again refer to this subject in view of Mr. Middleton's letter in your issue of May 19? The somewhat personal allusions there made I am content to leave to the judgment of others.

It may be—as Mr. Middleton says—easy to exaggerate the difficulty of applying a universal examination test in a registering system, but that I personally made no attempt to do. The point was that this aspect of the question required to be squarely faced in considering registration principles, and that nothing would be gained—and very much might be lost—by any attempt to slur it over. It is unfortunate that the records of biographical history are in conflict with Mr. Middleton's theory of "incorrigible laziness" as an explanation of the commonly understood aversion of a highly-developed artistic temperament to examination tests of the character likely to be imposed. If Mr. Middleton has had a "considerable experience" in dealing with incipient Brunelleschis he is much to be envied, and it is to be the more earnestly hoped that there will be no doubt about their being allowed to practise under the promised Registration Bill, when it comes along.

With regard to the "second head" of Mr. Middleton's subdivisions, it seems to be inferred that several "disciplinary organisations" were suggested by me as an alternative to that proposed. My letter must have been misread to gather from it any proposal so strange and so obviously undesirable. It was pointed out as not apparently essential to a registration scheme that the R.I.B.A. membership should be compromised, but that is quite another thing.

The only consideration really of consequence is whether architecture is likely to be advanced by what is proposed—whether registration, incorporation, or what not. This clearly requires that the whole subject should be very carefully and thoroughly considered by all interested persons—and not by one small section only—so that it may be comprehensively viewed from several standpoints. No generally acceptable scheme is likely to be evolved by a body of men biassed in one direction only, and bent, apparently, on preventing or overriding the expression of any views not entirely sympathetic to their own. If the arguments in their favour be sound, it is reasonable to suppose they would not be harmed by analysis or discussion—therefore, why this attempt to rush the matter regardless of the views or feelings of others equally, perhaps, entitled to some consideration?

Unity may be a very blessed thing, but it is not brought about by such methods, even though heralded by a blast of trumpets and a great shout. The terms of the bargain, declared to be so happily consummated, are not known except to a select circle, and the price proposed to be paid may conceivably be too high to effect any settlement worth the having. If the Society of Architects is giving up so much, as is claimed for them, may we not know (so that we may also admire) the full extent and nobility of the sacrifice. For the atmosphere seems to have changed considerably since the threatenings and slaughter of Mr. Bond's (Society of Architects) last presidential address, with its references to the degradation of "entering the ranks of another body through the only door which its unwisdom has left open," and the "utterly futile" proposals of the Registration Bill from this Society's point of view. It would be of great interest to know what alterations have been made in the latter to so happily change its character.

We are, accordingly, to be pitied, rather than blamed, who cannot share in the fulsome transports of those who profess to see in all this the inauguration of a new architectural epoch, promising great and wonderful things; and we deserve sympathy, rather than scorn, who have not yet the information necessary to appraise the value of the means whereby this great end has been, or is to be, attained. To say that the Profession—even as represented by the Royal Institute—is agreed on these proposals would be rank hypocrisy in face of the fact that there has never been an opportunity given to discuss them.

FREDK. R. HIORNS.

SIR,—Mr. Middleton, in his letter in your last issue, bases his arguments for the proposed absorption of the Society of Architects in the Institute on the desirableness of having one disciplinary organisation for registration purposes. Thus far he evidently carries with him the body of architectural opinion. But his arguments appear to imply that it is not possible to have unity so far as registration is concerned, and for the two architectural bodies still to retain their separate identities. Proof of this, however, has yet to be adduced, and until it has been proved beyond dispute that there are very great obstacles in the way of the formation of a registration authority and examination board on which both bodies are represented, objections to the proposed fusion of the two bodies will continue to be raised. The fusion involves considerable sacrifices on the part of the majority of the members of both bodies, while the necessity of such sacrifices has yet to be explained. HORACE CUBITT.

*** Other letters on this subject are held over till next week.—ED.

Edinburgh Theatre Fire.

SIR,—This sad catastrophe carried with it a lesson that is in danger of being overlooked, hence this letter. The press and the manager of the hall have made it clear that the safety curtain helped most materially in the fortunate escape of the entire audience. That curtain was made nineteen years ago by Messrs. John Stones, Ltd., of Ulverston, and is composed of an angle tee iron frame covered back and front with corrugated steel, and the cavity filled with the best light and durable non-conducting material available.

Unfortunately, in later years, influenced partly by fashion, partly by the greater ease with which it can be manipulated, partly by the convenience with which it can be fixed in position, and partly, perhaps, by the lower price, the woven asbestos curtain has in far too many cases been adopted. Its advantages as set out above are more than counterbalanced by the fact that (contrary to popular opinion) asbestos is a good conductor of heat, and, at a fire of any magnitude, will soon be practically as hot at the one side as the other; it is easily torn, say, by the falling of scenery or other *débris*, and, even where kept taut by a heavy roller, the draught of a fire causes it to sag at the sides until it ceases to be an effective barrier.

As an old volunteer fireman, I have seen both these classes of curtain in use at actual fires, also Gardiner's patent, which was supplied with water in the place of non-conducting material, and which acted quite well, but proved inconvenient to maintain so far as the supply of water was concerned, and I venture to hope that the lessons of experience will cause the Stones curtain to be used in preference to the other kinds.

Should it be said that I am influenced by the fact that I am Chairman of Messrs. John Stones, Ltd.; may I say that I am also Chairman of Messrs. Seaman & Co., Ltd., of Stockton-on-Tees, who have made and supplied dozens of woven asbestos curtains.

C. J. SEAMAN, A.M.Inst.C.E.

The *Daily Mail* Ideal Home Competition.

SIR,—With reference to a note which appears in your current issue dealing with the *Daily Mail* Ideal Home Competition, we have not the slightest intention or desire to conceal the identity of the two architects who have been good enough to undertake to act as judges. These are Messrs. E. C. T. Monson, F.R.I.B.A., M.S.A., Finsbury-pavement House, Finsbury-pavement, E.C., and Edwin J. Sadgrove, F.R.I.B.A., M.S.A., 9A, Little James-street, Bedford Row, E.C., both gentlemen having been kindly nominated by the President of the Society of Architects. One of the two ladies referred to is Mrs. Stoop, of Byfleet, the other has not yet been appointed.

F. E. BUSSY,
Organising Secretary,
Ideal Home Exhibition.

The Architectural Association Play.

SIR,—The A.A. Play is being given for the first time in the Institute Galleries, the first four days of next week. May I trespass on your Correspondence Column to ask all members of the architectural profession to support the A.A. on this occasion? Tickets may be obtained from 18, Tufton-street.

PERCY W. LOVELL,
Hon Secretary, A.A. Play.

FIFTY YEARS AGO.

From the *Builder* of May 25, 1861.

What About the Labour Question?

[*From the French of M. Chevalier, Member of the Institute.*]

THERE are some reforming aspirations we refer to with regret, but which we must nevertheless cite, because the history of our times will not fail to register them. Such is the project provisionally adopted in some workshops of suppressing piecework and of making every one, indiscriminately, work by the hour or day.

The Organisation of Labour.

If I were permitted to epitomise "the organisation of labour," as understood by M. Louis Blanc, in a few lines, I should say it consisted in the following innovations:—

1. The putting down of all competition.
2. Absolute equality (except during a transition stage) for everybody, without reference to each one's ability or industry.
3. The abolishing of all profit on capital beyond the legal rate of interest.
4. The election of chiefs and under-chiefs of all works by those under them.

I believe in my conscience that there is sufficient in this epitome to enable any one to adjudge it who possesses the least knowledge of the life of our workshops, or who knows anything of the human heart and the springs of human action.

With such an organisation of labour production would rapidly slacken; there would be less wealth to distribute, and in consequence very much more misery.

It is easy to see the cause; nobody would be directly interested in putting himself to any inconvenience, nobody would be urged on by the rivalry of his neighbours. M. Louis Blanc believes that his "social workshops" would be endowed with an immense power of expansion, and that no existing industrial undertaking could sustain for any time a contest with them. I appeal to everybody who has been at the head of a workshop. I will at once admit myself a convert to the new theory and become its enthusiastic apostle if there be found three among all the inhabitants of Paris, accustomed to its industrial habits, who will maintain that a workshop conducted on such principles could sustain general competition or last three months without becoming bankrupt.

EDITORIAL SUMMARY

Our leading article this week is entitled "The Architect at the Salon."

The second article (p. 634) is on "Colour Decoration," referring to Mr. R. Anning Bell's lecture before the R.I.B.A. on Monday.

"Notes" (p. 635) include: "Devonshire House"; "The Asch Building Fire, New York"; "Holme Park, Sonning-on-Thames"; "Water-colour Sketches"; "The Natural History and the New Science Museums, South Kensington"; "Coronation Stands and Public Buildings."

At the Royal Institute of British Architects on Monday Mr. R. Anning Bell lectured on "Painted Relief." An illustrated report will be found on p. 636.

An article on the "Hartley University College, Southampton, Competition," appears on p. 633. Some illustrations of the design placed second are also given.

In our Correspondence columns (p. 642) appear letters on: "Unity in the Architectural Profession"; "The Architectural Association Play"; "The Crittall Manufacturing Company *v.* The London County Council"; "The *Daily Mail* Ideal Home Competition."

The Monthly Review of Engineering (p. 647) includes: "The Rue de Rome Reconstruction, Paris"; "Prospects of Steel-Frame Building"; "Thermal Properties of Concrete"; "Asbestos Slates and Sheeting"; "Travelling Towers"; and Notes.

The Building Trade Section (p. 652) includes: "Efflorescence on Brickwork"; "Insurance against Unemployment"; "Government Contracts"; "Projected New Buildings in the Provinces," etc.

An abstract of a lecture on "Hospitals," delivered before the Society of Architects by Mr. A. Saxon Snell, appears on p. 656.

An abstract of a paper on "Illuminating Engineering," recently read before the Institute of Sanitary Engineers, will be found on p. 658.

Law Reports (p. 659) include: "West-End Nuisance Case"; "Architect's Plans and Fees."

MEETINGS.

FRIDAY, MAY 26.

The Royal Institution.—Professor Gilbert Murray, M.A., on "The Greek Chorus as an Art Form." 9 p.m.

SATURDAY, MAY 27.

Architectural Association Athletic Club.—Annual sports on the new club ground at Boreham Wood, Elstree. 2.30 p.m.

The Society of Engineers (Incorporated).—Annual dinner, Criterion Restaurant. 6.30 for 7 p.m. Mr. F. G. Bloyd, President, in the chair. After the dinner there will be a conversazione and concert.

Institution of Municipal and County Engineers.—Metropolitan District Meeting to be held at Woolwich. The following papers will be taken as read:—"Woolwich and Some of Its Works Since 1905," by Mr. J. Rush Dixon, M.Inst.C.E., Borough Engineer"; "Description of the Woolwich Footway Tunnel Under Thames," by Mr. E. H. Tabor, M.Inst.C.E., Resident Engineer.

MONDAY, MAY 29.

The Architectural Association.—The Architectural Association Play at the Maddox-street Galleries, No. 9, Conduit-street. 8.30 p.m.

WEDNESDAY, MAY 31.

Concrete Institute.—Mr. R. W. Vawdrey, B.A., on "Reinforced Concrete"—VI.

FRIDAY, JUNE 2.

Royal Sanitary Institute.—Provincial sessional meeting, Exeter, in the Royal Albert Memorial University College, when a discussion will take place on "Ventilation in Theory and Practice," to be opened by Mr. J. Jerman, F.R.I.B.A. 7.30 p.m.

SATURDAY, JUNE 3.

Royal Sanitary Institute.—Members meet at the Guildhall, Exeter, and proceed to visit the Sewage Disposal Works, Septic Tank System.

ILLUSTRATIONS.

Hartley University College.

TWO of our plates this week illustrate the successful design in the Hartley University College competition, to which we refer in detail on page 638. Mr. Clyde Young is a Fellow of the Royal Institute of British Architects and not an Associate, as printed on the plate.

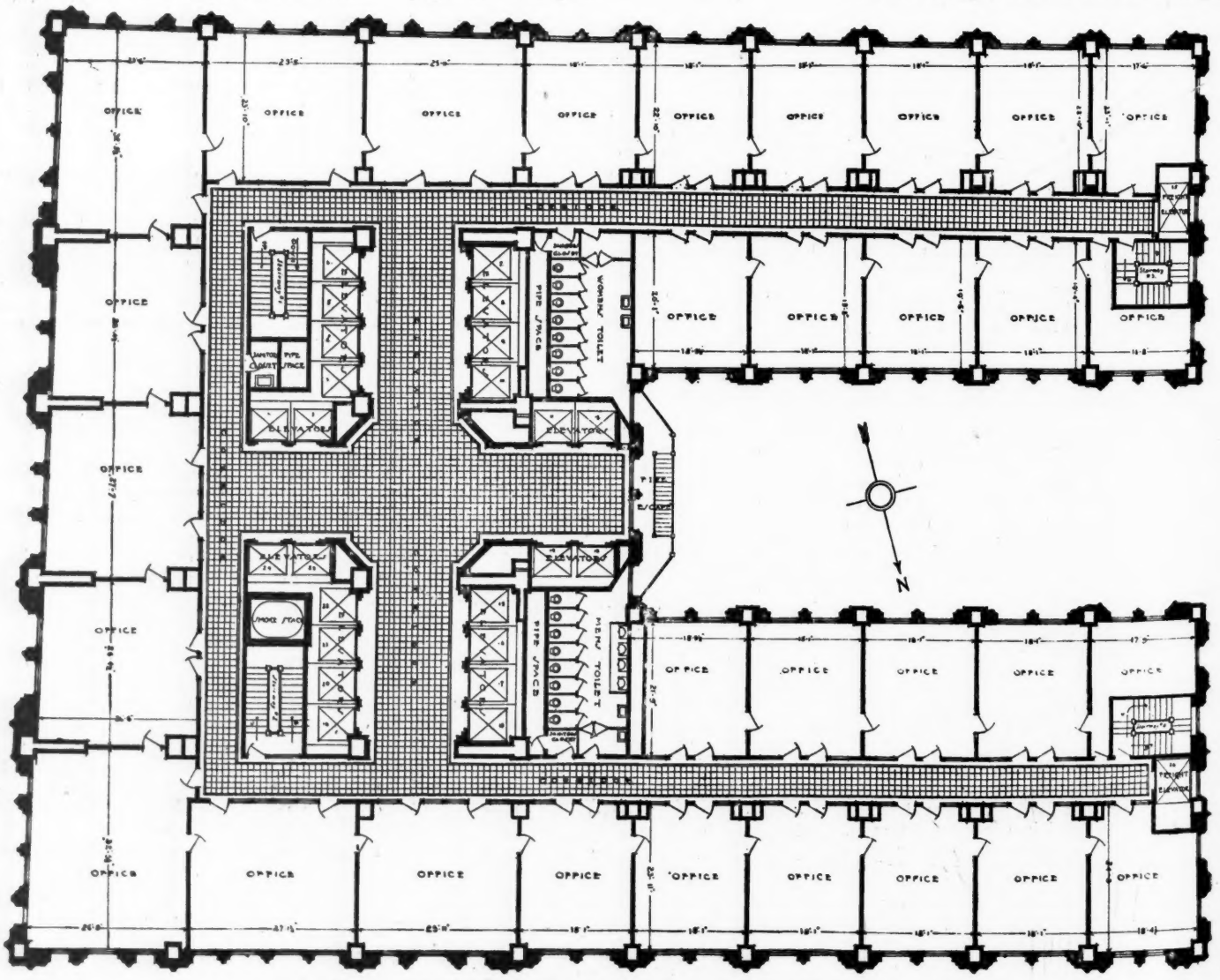
Woolworth Building, New York City.

NEW-YORK'S latest and greatest skyscraper, now in course of construction for Mr. F. W. Woolworth, is notable for other qualities than its enormous size. It will add a new and dominating feature to the picturesque skyline of the American metropolis. It is remarkably well-planned; and as vigorous, clean, and decorative architecture, is probably unequalled by any other commercial building in the same style. Such a gigantic structure cannot be satisfactorily shown by the means to which we are limited, as no drawing can at once show the design and the effect the design produces upon the beholder of the actual building. We are fortunately able to present two of the studies which, with the final design, give some idea of the feeling which the architect, Mr. Cass Gilbert (Honorary Corr. Member R.I.B.A.) has put into this work, and a view of the West-street building, which may be regarded as another preliminary essay in a style which, though it may be roughly described as Gothic, Mr. Gilbert has made his own by the original combination of decorative forms suited to the modern American form of construction.

The Woolworth building is now under construction, and is located on the west side of Broadway occupying the block front from Barclay-street to Park-place. It is opposite the United States Post-office and diagonally across Broadway from the New York City Hall.

The building has a frontage on Broadway of 152 ft. 1⅝ in.; on Park-place of 197 ft. 10 in.; and on Barclay-street of 192 ft. 6½ in. The property is owned by the Broadway Park-place Company, F. W. Woolworth, President. This Company has acquired the property facing Park-place next west of the building, so as to assure its light in the rear.

The principal feature of the building is a great tower 86 ft. by 84 ft. square, rising to a total height of 750 ft. above the sidewalk. This makes a structure fifty-five stories high, including all stages up to the great electric light, which is proposed to be placed at the apex of the tower. The main building is to be twenty-nine stories high, with two stories in the gables


OFFICE
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on the north and south front, making thirty-one stories at the highest point of the main structure.

The ground story or street floor is designed for stores and an arcade with openings on Broadway, Park-place, and Barclay-street. This arcade will contain a large number of attractive shops being with fronts entirely plate-glass, or available for open fronts as may be later determined.

The banking floor or mezzanine story on the Park-place side will be occupied by the Irving National Bank, and indeed the project originated with the demand of this bank, and a first-class Broadway location.

The basement will contain a safety deposit of ample dimensions, and giving first-class facilities. There will be a restaurant and rathskeller in the basement, a barber shop, and a number of storage rooms which can be connected directly with the stores above, and some of which may be available for other tenants. In connexion with the barber shop it is proposed to put in a large swimming tank.

The machinery, coal storage, refrigerating plant, power plant, electric generators, filtration plant, and other mechanical equipment, will be placed in the sub-basement.

A club will be located in the twenty-eighth story.

The balance of the building will be used for office purposes.

There will be a look-out gallery at the fifty-fourth floor accessible for visitors.

The exterior of the building will be of stone and terra-cotta, and may be classed as Gothic in style, although it is a type of Gothic developed to meet the special needs of the modern American high office building. The necessity of frequent and regularly recurring window openings and the fixed locations of the steel columns and girders necessarily established certain conditions of design which are not to be found in Gothic buildings of the Old World, and require a development suited to modern needs.

Provision has been made for thirty-four elevators, of which twenty-four are grouped nearer the Broadway entrance in four banks of six each. At the west end of the building there are two large freight elevators available for passenger service. Provision has been made for additional minor elevators for the bank, stores, observation gallery, etc.

The total cubical contents of this building measured from the top of the caissons exceeds 13,200,000 cubic feet. The caissons extend down to rock, and are bedded upon the solid rock from 110 ft. to 130 ft. below the level of the sidewalk. These caissons are of enormous dimensions, some of them being as great as 19 ft. in diameter. This is one of the largest caissons contracts ever executed. It was deemed imperative for so great a building as this that the foundation should be absolutely secure and above any possible question, so a very considerable portion of the cost of the building goes into the foundation.

The construction of the building, of course, is absolutely fireproof throughout, and every provision has been made for the greatest comfort and safety of all occupants. Four self-contained stairways are provided from the roof to the level of the street. Duplicate self-contained stairways are provided in the tower, in addition to which there is an outside fireproof staircase in the court accessible from the corridors of each wing. These self-contained stairs are entirely separated from the corridors and office spaces by fireproof walls and by wire glass doors. This would make the stairways smokeproof as well as fireproof, so that in the remote chance of a local fire in any part of the building causing smoke, the stairways would be entirely free from it. The elevators are likewise self-contained, being separated from the corridors by iron and wire glass doors. In short, every precaution has been taken to render the building absolutely fireproof and of the highest class of construction in every respect.

The contract for the foundation work was let last November to the Foundation Company of New York, and the work has been under way since that time, and is now largely completed.

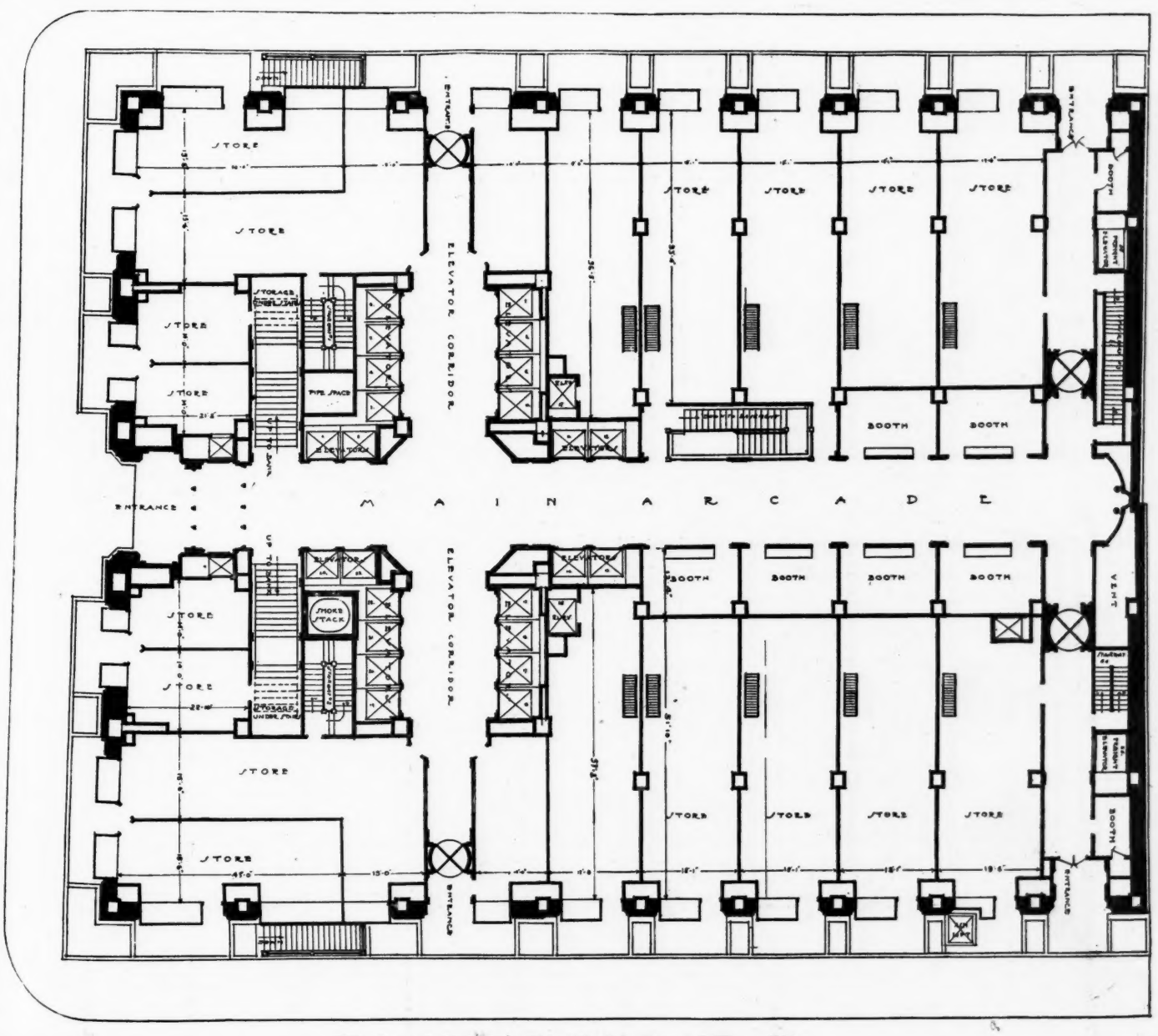
The general contract for construction was recently awarded to the Thompson-Starrett Company of New York, who are the contractors for the new municipal building and many other large structures in this city and elsewhere in the United States.

The sub-contract for structural steel, amounting to over 20,000 tons of metal, has already been awarded. The consulting engineer for the structural work is Mr. Gunvald Aus, of New York.

Drawings for the general construction of the building were filed with the Department of Building, April 24. The work is now being rapidly organised, and it is intended that the building shall be completed in the autumn of 1912.

MAGAZINES AND REVIEWS.

The *Art Journal* contains an article on the etchings of Wenceslaus Hollar, who, thinks Mr. Luke Taylor, has not yet received the recognition due to him. The fact is, Hollar was too prolific for the taste of the collector, whose delight in a work of art is very often dependent on the rarity of the object considered. Hollar led a curiously varied life, in which travel played a great part, hence the number of his topographical plates. Born at Prague, he was taken up by the Earl



Woolworth Building, New York: Ground Floor Plan.
Mr. Cass Gilbert, Architect.

Arundel, who met him at Cologne. In 1645 the artist fought side by side with Faithorne and Inigo Jones in the defence of Basing House. Hollar died in great poverty at Westminster in 1677. Mr. Rhead is well informed on the subject of fans, and the illustrations of examples by various artists are interesting.

A colour plate of the decoration of the central Apse Sant Pere de la Seo d'Urgell, forms the frontispiece to the *Burlington Magazine*, and a similar Romanesque fresco at Pedret is illustrated also. Piranesi's "Carceri" etchings are described by Mr. A. M. Hind, of the British Museum, where are kept some early states of the plates; and Guardi's newly-discovered "Gala Ball in the Theatre of S. Benedetto a Venice" is illustrated.

The *Studio* opens with an article on the work of Mr. William Orpen, A.R.A., one of the pillars of the New English Art Club. Part I. of a series on "The American Colony of Artists in Paris," includes illustrations of pictures by Messrs. Richard Miller, F. C. Frieseke, George, and Oberteuffer. The Royal College of Art Engraving School receives notice with reproductions of prints by Mr. Martin Hardie, Mr. D. I. Smart, Mr. Sparks, and other etchers. An article on modern Japanese art is noteworthy. Illustrations are given of houses designed by Mr. Morley Horder and Mr. Gilbert Fraser.

In the *Nineteenth Century* will be found an interesting article by Mr. Bram Stoker on the work of the late Sir Henry Irving in advancement of the art of stage lighting. The developments due to Sir Henry in this direction can be easily appreciated in the results, but few can have realised the long and persistent efforts necessary to their achievement.

The *National Review*, in an article by Lady Edward Cecil, presents a sordid picture of some of the homes in which our "respectable" poor are compelled to live. The article shows how far we still must go before we can rest satisfied that healthy and decent homes are within the reach of the industrial classes generally.

In *Scribner* an illustrated article by Mr. Kenyon Cox deals with "The Classic Spirit in Painting." Mr. Cox defines the classic spirit as "the disinterested search for perfection; the love of clearness and reasonableness and self-control; and, above all, the love of permanence and of continuity." Mr. Shaw Sparrow discourses on Mr. Frank Brangwyn and his etchings, giving illustrations of some striking examples, including several dealing with architectural subjects.

Some interesting pieces of statuary are introduced into an article in the *Century* on "The Women of the Cæsars." Mr. Frederick Keppel takes the subject of "Piranesi, Etcher and Architect," into consideration, and includes among his illustrations the "Colosseum" and one of the "Carceri" plates. Some of the Niagara lithographs by Mr. Joseph Pennell are reproduced.

In the *Pall Mall Magazine* is an interesting illustrated article on "The Queen Victoria Memorial—The Story of Its Making Told by Its Maker, Thomas Brock, R.A." A coronation article, "The Crowning of the King," is also of some general interest.

ARCHITECTURAL SOCIETIES.

Royal Institute of the Architects of Ireland.

A special meeting of the Council of this Institute was held at No. 31, South Frederick-street, on Monday last. The President, Mr. A. E. Murray, R.H.A., F.R.I.B.A., was in the chair, and there were also present:—Messrs. C. H. Ashworth, F. Hayes, L. O'Callaghan, H. Allberry, G. P. Sheridan, F. G. Hicks, J. H. Webb, R. Caulfeild Orpen, A. G. C. Millar, C. J. MacCarthy, and C. A. Owen, Hon. Secretary. A large amount of correspondence was dealt with. It was resolved that a printed form embodying particulars of the forthcoming examination for studentship be drawn up for the information of intending candidates. A representative of the Institute was appointed to attend the Congress of the Royal Sanitary Institute at Belfast.

ENGINEERING SOCIETIES.

Institution of Municipal Engineers.

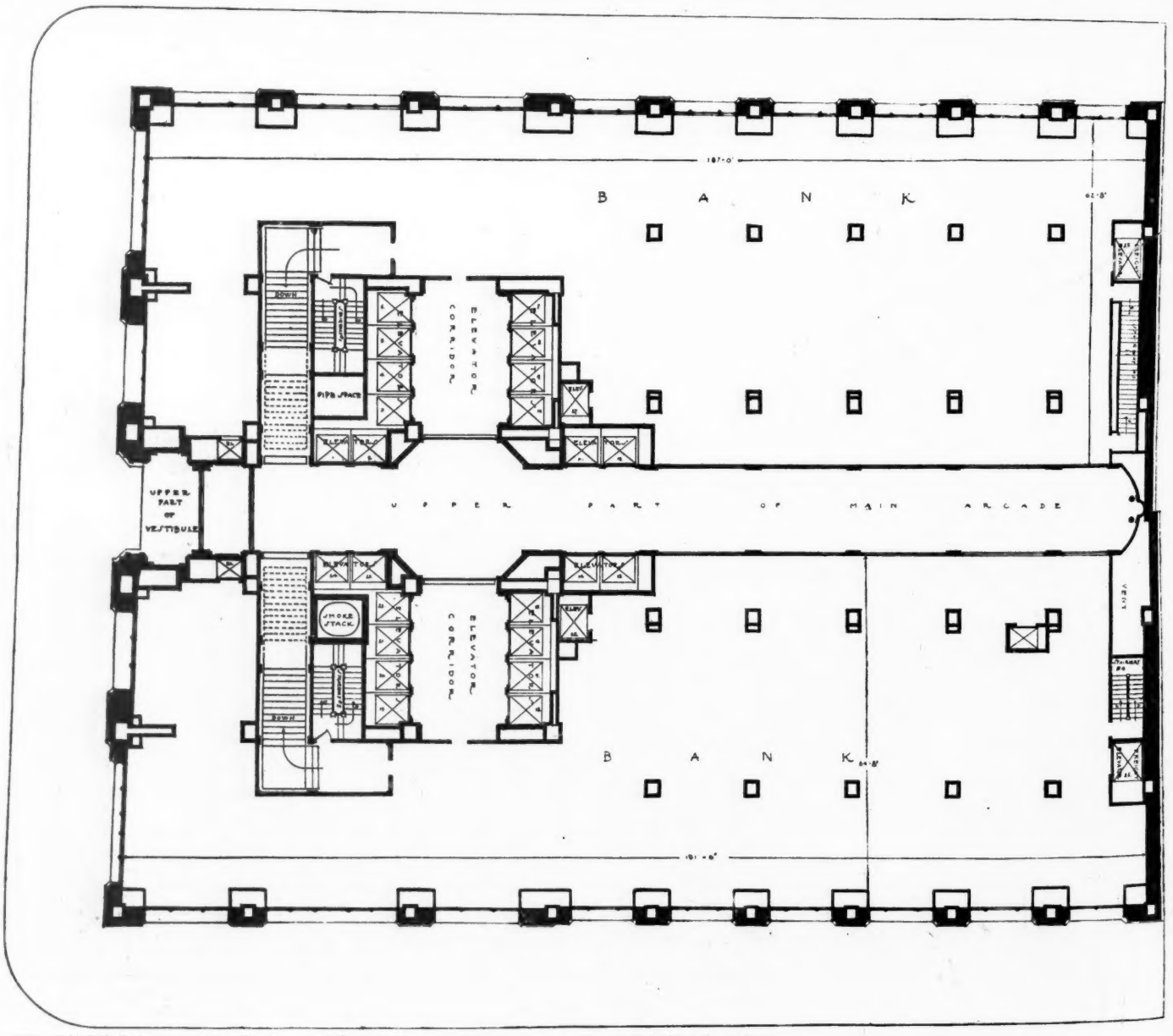
Arrangements have been made to hold another discussion evening in the Council-room of the Institution, 39, Victoria-street, S.W., on Wednesday, May 31, at 7.30 p.m., when Mr. Guy Wilfred Hayler (late of the Borough Engineer's office, Gateshead) will open a discussion on "The Street of To-day and To-morrow."

Introduction.—The evolution of the street.

(1) *Traffic Considerations.*—Paving, repair, cleansing, lighting, traffic—motor, horse, and pedestrian. Obstructions to free flow.

(2) *Building Considerations.*—Architecture, frontage lines, by-laws and building legislation.

(3) *Æsthetic Considerations.*—Tree-lined streets and boulevards, parks, squares, and gardens, advertisements, statuary, fountains, smoke, noise, the ideal city.



Woolworth Building, New York: First Floor Plan.
Mr. Cass Gilbert, Architect.

MONTHLY REVIEW · *of* · ENGINEERING.

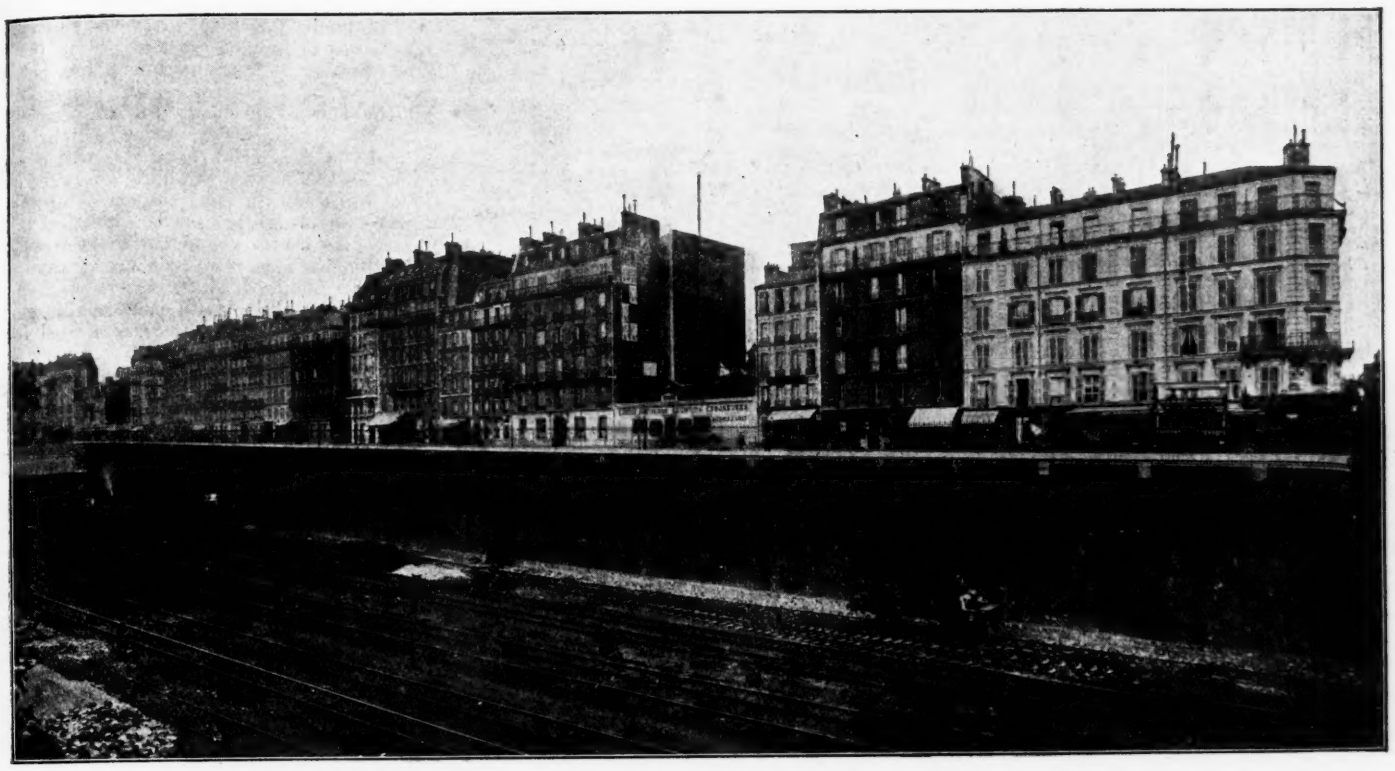


Fig. 1. Rue de Rome after Completion of Works.

RUE DE ROME RECONSTRUCTION, PARIS.

A PHASE of civic design involving considerable outlay and difficulty is that relating to street improvements necessitated by increasing traffic in large cities.

The alteration of existing thoroughfares is always costly, and piercing new avenues is still more so, besides giving rise to controversy, as, for instance, in the case of St. Paul's Bridge and the new streets connected therewith.

The reconstruction of the Rue de Rome in Paris is one of a series of works undertaken by the Administration of the French State Railways for the purpose of providing space for the establishment of two extra lines between the Saint-Lazare terminus and the station of Bécon-les-Bruyères, the point of separation for the main lines to Havre, Granville, and Brest.

From the standpoint of civic design the most interesting item of the works is the widening of the cutting between Saint-Lazare and the goods depôt at Batignolles, this trench being bordered for its entire length on the south-west side by the Rue de Rome, a street bordered by buildings of considerable height and carrying heavy traffic, while along part of the north-east side is the extensive and pleasantly-wooded Square des Batignolles. Fig. 1 is a view of the Rue de Rome as it appears to-day.

The retaining wall along the Rue de Rome attained the height of nearly 43 ft. at the mouth of the tunnel, and in part of its length the total height above foundation level is more than 62 ft. The first widening project contemplated the establishment of a long tunnel under the Rue de Rome, with accommodation for two supplementary railway lines, but a better plan put forward by M. Charles Rabut, Ingénieur-en-Chef des Ponts et Chaussées, was to demolish the south-west retaining wall, to construct a new wall behind the original structure, and to carry the Rue de Rome over the new lines by means of reinforced concrete corbels projecting 23 ft. beyond the face of the new wall at the widest point. This cantilever construction with the connecting slab and beams extends for a length of 2,300 ft., and along the front of the Square des Batignolles a similar encorbelment has been constructed with the maximum projection of 16 ft. 5 in. and the length of 984 ft.

On the Rue de Rome the footpath, 13 ft. wide, and 10 ft. of the roadway are supported over the new railway lines, and the roadway carries heavy vehicles, including motor 'buses and steamrollers with the weight of over 32 tons each.

Fig. 2 is a view beneath the series of consoles illustrating the considerable space gained without entrenching upon the width of the street above. This photograph gives an excellent idea of the exceptional projection of the cantilevers.

The advantages of the project originated by M. Rabut, as compared with the tunnel originally proposed, are that the length of the tunnel will be kept down to about 1,115 ft., that future modifications of the lines will be facilitated, that less encroachment is made on the ground, encumbered with sewers and various conduits beneath the street, that the railway is kept farther from the high buildings facing the street, and which would have suffered both by disturbance of their foundations during construction of the tunnel and by the vibration of passing trains.

In view of the exceptional importance of the walls to be constructed a special form of design was adopted by M. Rabut, both for the body of the walls and the cantilever

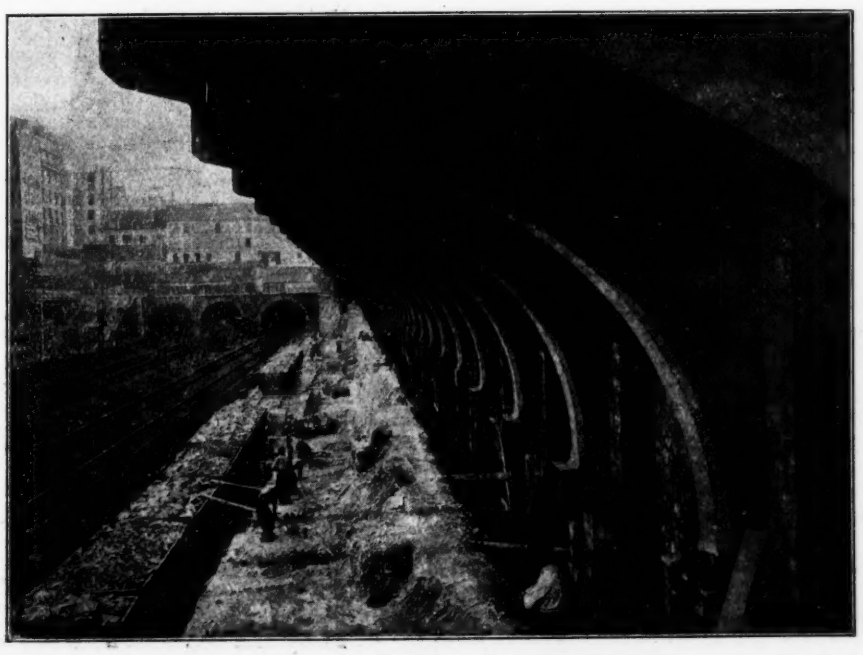


Fig. 2. Rue de Rome: New Cantilevers.

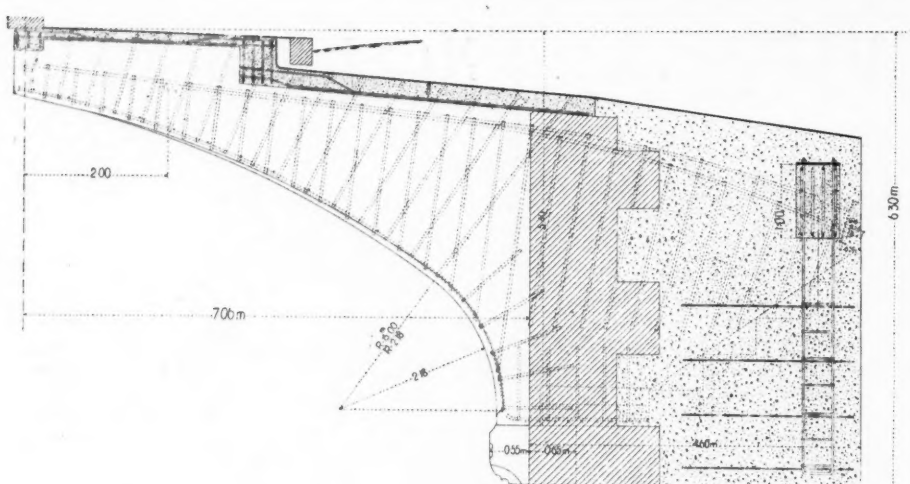


Fig. 3. Rue de Rome: Balanced Cantilever Construction.

projections. Hitherto it has been customary to extend the width of retaining walls at the base so as to keep the resultant pressure within the middle third of the section and to minimise the unit pressure on the ground. One effect of this method where the resultant is near the boundary of the middle third is to make the maximum pressure double the mean pressure on the soil. M. Rabut has demonstrated that by widening the wall at the top it is possible to obtain adequate resistance to the overturning moment and to keep the resultant pressure near the centre line of the base, thereby making the maximum pressure not appreciably greater than the mean pressure on the soil. This form of design as adopted along the Rue de Rome has effected a slight saving in respect of masonry, while at the same time reducing the cost of excavation and occupying less space beneath the street above. In cases where a retaining wall carries encorbelment the widened upper part is specially valuable, as it furnishes the counterbalance necessary for the stability of the cantilevers.

The application of the principles stated above led M. Rabut to adopt a distinctly revolutionary profile for the new retaining walls, whose thickness is less than one-eighth the height and only about two-fifths the thickness of the old walls.

To the casual observer the cantilevers shown in Fig. 2 and other illustrations may appear to be of somewhat hardy nature simply because the counterbalance hidden under the roadway cannot be seen, but as a matter of fact the equilibrium of the construction is fully assured. This point is made clear by the section reproduced in Fig. 3.

The encorbelment comprises two continuous decking slabs, one carrying the footpath and one part of the roadway, the slabs being stiffened by longitudinal beams and the whole supported by the cantilevers. As considerable pressure is exerted against the pilasters on the wall at the foot of the cantilevers the masonry is reinforced by steel plates in the joints.

Fig. 4 shows the completed cantilever roadway and parts of the old wall in course of demolition.

We may add that the æsthetic treatment of the works is due to M. Barret, the Chef on Service d'Architecture to the Chemin de fer de l'Ouest.

The employment of encorbelments in reinforced concrete is an important resource for city architects and engineers, and may be applied with advantage in problems involving the simultaneous widening of parallel means of locomotion at different levels, such as a road and a railway, two railways, or a river and the quays on either side. The last-mentioned application may be found advantageous in many cities, and particularly in Paris, where the widening of narrow bends of the Seine forms part of the programme for flood prevention.

The authorities dealing with this question have already invited M. Rabut to formulate a project for increasing the capacity of the Seine in Paris without reducing the width of the highways bordering the river, and providing, where desirable, for increasing their width. We are informed that M. Rabut has prepared a scheme, which will shortly be made public, wherein he proposes the construction of encorbelments of unprecedented projection at a cost per square yard of space covered less than that of bridges built in the city during recent years.

THE PROSPECTS OF THE STEEL-FRAME BUILDING.

ALTHOUGH only some eighteen months have elapsed since the passing of the London County Council (General Powers) Act, 1909, which legalised the erection of steel-frame buildings, already there appears to be a disposition among many persons to talk of the Act as being practically a dead letter. It is admitted that probably the number of buildings at present being erected under its provisions is comparatively small. But, whatever may have been our national characteristics in the past, it is certainly not the practice of our countrymen of to-day to stray by many hair-breadths from the path of caution in pursuit of new ventures. It may therefore be said, not unfairly, that the only thing indicated by the inactivity of the past twelve months, as regards steel-frame construction, is the predominance of the strong conservative spirit with which much of our building work is fettered.

While not attempting to draw any conclusions as to future progress from the result of little more than a year's experiment, it may, however, be possible to gain some idea of probable developments from the general consensus of opinion with regard to the new requirements. The question affects not only London, but indirectly the provinces, for if the new requirements are unsuccessful in London similar requirements will hardly be framed by provincial towns. It will be found that, in the opinion of almost everyone qualified to speak on the subject, the use or otherwise of steel-frame construction is considered to centre round the question of cost. On this basis it may be thought that if, in order to facilitate quickness of erection and thus indirectly save a considerable sum of money, it is desirable to raise a steel frame, and then build brick walls of ordinary thickness, it will obviously be desirable to take advantage of the provisions of the new Act. But it seems that there are several other considerations which affect the issue. For one thing, if a building is erected under the new Act the District Surveyor's fees are increased two and a half times their ordinary figure. But this is a comparatively small matter. A more serious question is the delay which may arise while the drawings remain in the District Surveyor's hands awaiting his approval, which, of course, is not given until he has made the necessary calculations and satisfied himself that the provisions of the Act have been duly complied with. But the real crux of the question appears to be the constructional requirements of the Act. It seems, although the allowable stresses on the steelwork are greatly increased as compared with those put forward in the original Bill, that adherence to these official requirements will often result in the provision of a greater weight of steelwork than would be supplied in ordinary practice. Furthermore, the steelwork of both stanchions and joists must be protected from the effect of fire, a most desirable requirement in all cases, but one which in ordinary work is not infrequently more honoured in the breach than in the observance.

It may thus be seen that, where the character of the proposed construction is not too high, compliance with the new requirements may be a more costly process than that of erecting an ordinary brick building, or, if celerity in erection is of vital importance, in building a steel frame, in such a manner that it is not affected by any statutory requirements, and then surrounding it with brickwork of ordinary thickness. For work which is not of

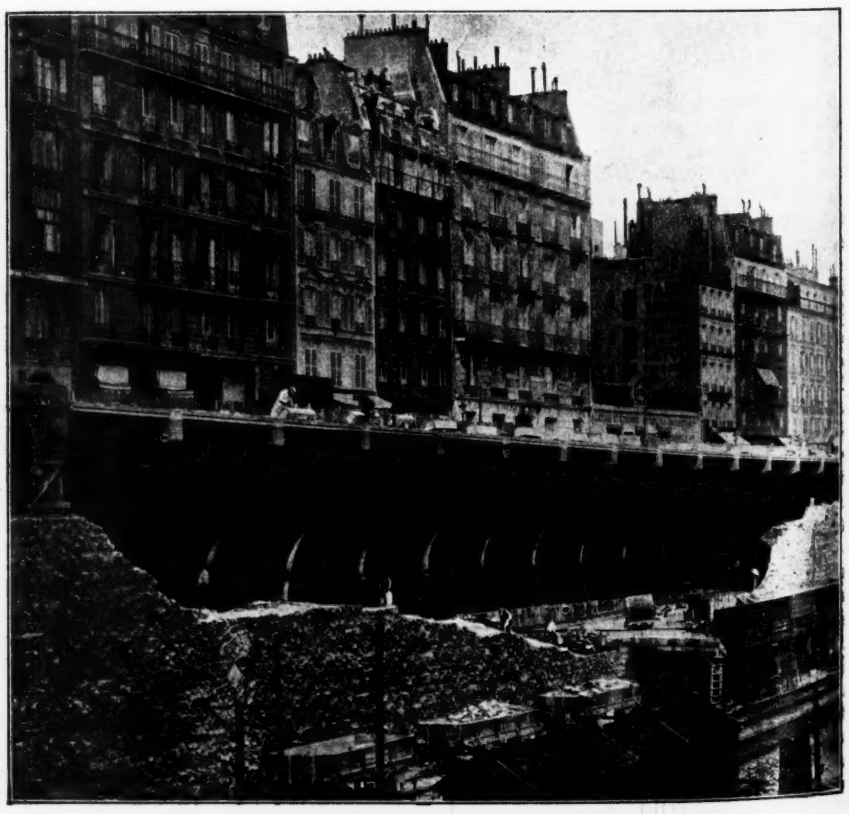


Fig. 4. Rue de Rome: New Roadway and Parts of Old Retaining Wall.

good quality it may therefore be said that the new Act offers practically no advantages. But for work of the best class, where steel is required to be used to form the framework of the building, surely the new provisions have much to recommend them. Probably, since the standard of construction is in this case a high one, that almost decisive factor, the cost, will tend to influence a decision in favour of their adoption. But supposing that the cost is the same in either case, which is the better method, to provide that the steelwork which carries the structure has an ample factor of safety, and that the brick filling is of the thickness of a filling and nothing more, or to have steelwork with a lesser factor of safety, and brickwork, valueless in this case for load-bearing purposes, much thicker than that required? A pardonable liking for thick walls and solidly-built construction should not be allowed to result in the provision of heavy brickwork in positions where one-half or even one-third the thickness would produce a more satisfactory result. To do this is contrary to the canons of art as well as of construction, for no good architecture can result from illogical building.

On this basis it may be hoped that in all cases in London where steel is used, advantage will be taken of the new provisions which admit of the steel being adopted as a true structural material, with its use indicated by the form of the structure. Few, at any rate, will attempt to justify the other alternative—the use of steel hidden behind a sham brick or masonry front—though some may practise what, from the purely theoretical standpoint, they would condemn. Further, some District Surveyors are inclined to take the view that when, in the words of the 1909 General Powers Act, the loads and stresses are transmitted through each story to the foundations by a skeleton framework of metal the provisions of such Act must be complied with, and that the construction of brick walls of schedule thickness will not bring the building outside the scope of the Act.

Having regard to the admitted slowness with which the building profession are taking advantage of the new structural provisions, it is evident that if these provisions had gone through in the form first proposed by the County Council a search for a building erected under their auspices might have been as lacking in result as was that of the Greek philosopher for an honest man. Corporate gratitude is a quality rarely revealed, but the County Council should in all honesty evince some measure of gratitude to those bodies that opposed their Bill in Parliament, and obtained the modification of its more objectionable provisions and thus made it of practical value.

THERMAL PROPERTIES OF CONCRETE.

AN investigation into the properties of concrete affecting the value of that material in fire-resisting construction has been in progress for more than three years at the Massachusetts Institute of Technology under the direction of Professor C. L. Norton. Some of the results so far obtained are summarised in this note.

(1) *Coefficient of Linear Expansion.*—Although the expansion data are not yet complete, the results show that the elongation per unit length of 1:2:5 concrete per degree Fahrenheit averages 0·0000055, that the coefficient increases somewhat up to 575 deg. Fahr., and that it decreases beyond the same temperature.

Therefore, while the expansion of concrete and embedded steel is practically equal at moderate temperatures, it appears that as temperature increases the expansion of the heated surface does not increase proportionately. Consequently the cooler interior of the concrete is not liable to stresses so severe as would be developed if the expansion of the surface were proportionate to the temperature.

(2) *Diminution of Strength After Heating.*—Only a few tests have been made on small cubes and beams with the object of ascertaining the reduction of compressive strength due to continued heat. The most useful point established up to the present is that, even in the case of a small cube subject to flame all round at a temperature of 1,500 deg. Fahr. for two hours, the concrete was left with the capacity for supporting double the safe working load. It must be remembered that in actual practice the conditions are never so trying as those stated, and the influence of heat is proportionately less. Some experiments with cinder concrete containing little carbon gave satisfactory results from the standpoint of fire resistance, but cinder concrete with 10 per cent. of carbon added to the aggregate gave evidence of combustibility, and similar concrete with 25 per cent. of carbon added to the cinder burned until it fell to pieces.

(3) *Specific Heat.*—The results ascertained are stated in the subjoined table :—

Temperature Degrees Fahrenheit.	Specific Heat (Water=1·00).		
	Stone Concrete.		Cinder Concrete.
	1 : 2 : 5.	1 : 2 : 4.	1 : 2 : 4.
72 to 212	0·156	0·154	—
72 to 372	0·192	0·190	0·180
72 to 1,172	0·201	0·210	0·206
72 to 1,472	0·219	0·214	0·218

From these figures it will be seen that the specific heat of concrete is less than that of brick and building stones. Therefore the quantity of heat required to raise the temperature of 1 lb. of brick or stone is greater than for 1 lb. of concrete. But, as architects deal with cubic feet rather than pounds of building material, the relative volume and density of concrete and brick or stone must be taken into account when comparing specific heats.

(4) *Heat Conductivity.*—The thermal conductivity of concrete as determined by experiments is given below, the temperatures stated referring to a heated plate applied to one surface of the concrete :—

Temperature Degrees Fahrenheit.	Heat Conductivity (B. Th. U. per degree Fahrenheit per square foot per inch thick per hour).		
	Stone Concrete.		Cinder Concrete.
	1 : 2 : 5.	1 : 2 : 4.	1 : 2 : 4.
95	6·25	—	2·33
392	—	6·08	—
752	—	6·37	—
932	—	6·66	—
1,832	—	7·83	—
2,012	—	8·42	—

The superiority of cinder over stone concrete as an insulating material is clearly shown by the table. Another interesting result ascertained was the relatively low conductivity of concrete which had not been tamped and was made as porous as possible. The thermal coefficient for this was from 3·15 to 4·75, a result suggesting that the strength and heat conductivity of concrete are inversely proportional.

THE USE OF ASBESTOS-CEMENT SLATES AND SHEETING.

ASBESTOS-CEMENT for roofing and rendering walls, ceilings, and partitions fire-resisting, although of comparatively recent introduction, is gradually becoming as well known in this country as on the Continent.

Although asbestos-cement slates are well adapted for cheap factory buildings, docks, wharves, breweries, and temporary stores, they cannot be generally recommended for dwelling-houses, for the following reasons :—If laid in the ordinary quarry slate (double lap) style, asbestos-cement slates warp and tend to curl up at the bottom edge when the sun is very hot—an ordinary slate always lies flat under any conditions of weather. Another serious objection to the coloured artificial slate is that it does not always retain its colour, but fades and becomes patchy in places; the cause of this is the free lime and magnesia in the cement, which also produces a white film on the material after a shower of rain. The colour of the ordinary red tile is permanent, and becomes darker with time. Before specifying asbestos-cement for the roof of a workshop or factory it would be as well for the architect to get some kind of a guarantee that the material is such as described. In view of the fact that much of it is of foreign manufacture, there is no proper standard by which the material may be compared; it may contain little or no asbestos at all, and the cement used may be of poor quality. If it were manufactured more extensively in this country a far higher standard of excellence would be obtained. Some foreign firms represented in this country seek to hide their identity by assuming a quasi-British style of name, and, again, some British firms buy foreign material and sell it again under their own trade mark. This is unfortunate, as it throws discredit on the British product.

As a rule, makers of asbestos-cement slates only guarantee them for ten years; this is an absurdly short period. The life of a natural slate or tile (excepting accidents) is practically everlasting, and if an artificial slate is only good for ten or fifteen years it is almost useless. Possibly, owing to inferior ingredients, this guarantee would best fit in with some of the material manufactured abroad.

We will now turn to asbestos-cement sheeting for ceilings and lining the inside and outside of walls of wood-framed buildings. It will often be found that these sheets vary very much in thickness, producing unsightly joints where the edges of the sheets butt together, and which the wallpaper fails to hide, also the nail heads, unless very small, will be too much in evidence. To conceal these defects it is the usual practice to nail wood pieces over the joints and produce a panelled effect; but if more care were used in making the sheets this would not be necessary. The sheets should not be kept too long in stock, as they gradually dry and harden, and nothing annoys a carpenter more than to find that he is obliged to drill every hole in the sheet before nailing, in addition to the injury done to his saw when cutting and trimming the sheets.

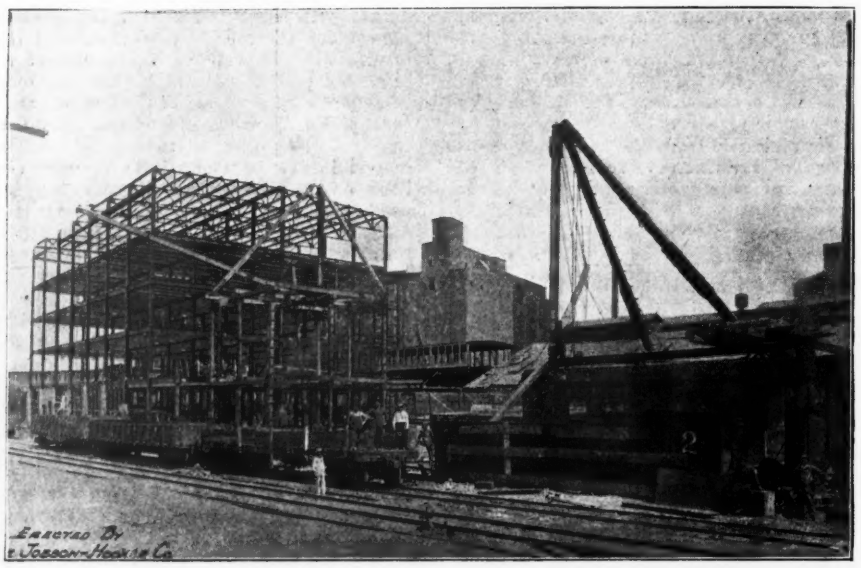
Although requiring more woodwork for fixing, this material will be found superior to corrugated-iron when insulation against fire, cold, and heat are of primary importance. A very good material for inside lining, first made into asbestos sheets and then steeped in various chemical solutions, was put on the market a few years ago. This, although very suitable for inside purposes, did not answer so well for roofing, as it was too absorbent, necessitating painting to make it waterproof; also the price was too high compared with other roofing materials to make it a financial success. This material, at any rate, had the merit of being genuine asbestos sheeting, in the first place, as its method of manufacture ensured this. At the present time in fibro or asbestos-cement sheeting the proportion of asbestos to cement may be anything, for, as already stated, there is no recognised standard by which the material may be tested or compared. Every maker has his own particular mixture, which may be good, bad, or indifferent; and there is certainly room for considerable improvement in the material. But most of the existing objections against it could be overcome by using more care and intelligence in its manufacture.

Expert knowledge is required in this industry as much as in other undertakings, and it is courting failure to trust entirely to some so-called practical man of little education and no technical knowledge whatever. The foreigner, in spite of inferior cement, has certainly achieved success where comparative failure has been met with in this country.

TRAVELLING TOWER FOR CONSTRUCTING A STEEL-FRAME BUILDING.

IN the construction of the steel skeleton for a large industrial building in Ohio the contractors made use of the travelling tower illustrated on this page, the staging so constituted having proved both convenient and economical.

The building in question is 400 ft. long by 78 ft. wide apart from two wings at the ends, measuring 65 ft. by 60 ft. and 65 ft. by 40 ft. respectively, and, as shown by the photograph, it includes five stories. The skeleton is of



Travelling Construction Tower.

simple character, designed to avoid multiplicity of structural sections, and contains nearly 1,600 tons of steel.

The tower measured 30 ft. square in plan by 43 ft. high, the corner and intermediate posts, 10 in. square, being mounted on 8 in. by 16 in. sills. Horizontal bracing members, 3 in. by 12 in., were added, and each vertical panel was braced by 1-in. steel rods, provided with turnbuckles, and connected to plates at the ends and intersecting points.

Booms for hoisting purposes were fitted at the top of the tower, and the hoisting engine, mounted on a platform at the base, served as a counterbalance to the loads raised. We are informed that the tower was very rigid in spite of its comparatively small weight, and that after completion of the contract it was taken apart for employment on future works of the same character.

Steel members and sections were brought close up to the building on railway metals running from end to end of the site and unloaded from the trucks by means of a derrick mounted at one corner of the tower and having a boom 60 ft. long.

The track for the tower was laid parallel to the railway metals, with the gauge of 30 ft., and was situated so that the full width and height of the building could be readily commanded. As a matter of fact, the range of the derrick boom was sufficient to permit the contractors to employ the tower for erecting some of the steelwork in one of the wings.

The use of the tower commenced at the far end of the building, and by its aid the steel frame was erected at the rate of about one panel a day.

After the skeleton had been completed for more than half the total length the remaining part was erected by the aid of a 60-ft. boom derrick moved forward after the completion of every second panel. This derrick is shown at the right-hand of our illustration.

The reasons for abandoning the use of the tower was that part of the site was occupied by buildings which had to be demolished in longitudinal halves so as to avoid interference with business. Hence the constant removals of the tower would have involved considerable inconvenience and expense.

By employment of the tower steel members could be hoisted from the railway trucks and slung direct into their predetermined positions, where they were supported by the boom until bolted in place. The avoidance of rehandling material and the delays attending the shifting of derricks were remarkably advantageous, and, despite time wasted owing to the non-completion of foundations, the skeleton was completely erected within three months from the start.

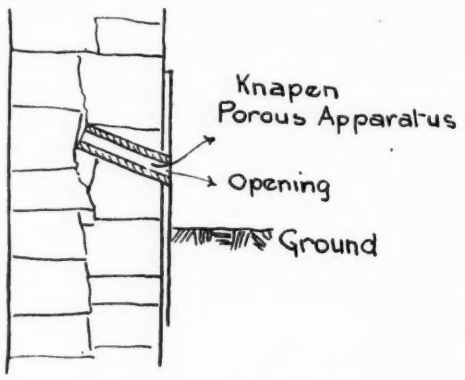
The tower here described was constructed by the contractors, the Jobson-Hooker Company, of New York, to whom we are indebted for the photograph reproduced.

ENGINEERING NOTES.

Dampness in Walls. DAMPNESS of walls is one of the many difficulties architects have to contend with, and various means have been employed to lessen this evil. Hollow walls have been employed with varying success, various kinds of slabs, coats of paint, cement and metal sheets have all been tried, but the evil has not always been overcome.

In some districts it has been found advisable not to employ glazed or vitrified bricks as condensation followed their use, and for the same reason hard, dense cements as an internal finish are failures. In some districts where rubble walling is common the courses of stone are laid with the courses sloping from the inside to the outside as a preventive of this evil.

A new system has been invented by Mr. M. A. Knapen, of Mons, based upon the hygrometric state of the surrounding atmosphere and the porosity of the materials of the walls to be dealt with. The figures show the apparatus and the methods of application. The method consists of drawing out the moisture from the walls by means of the tubes shown. The operation is as follows:—As soon as there is a hygrometric difference between the wall and the external air the air in the tubes acts as a



duct, and the tendency is for this air to absorb any excess of humidity in the wall interior or otherwise according to the season. Of course, the materials of the wall have to be taken into consideration, and therefore each case has to be taken on its merits. The mean hygrometric value of the atmosphere has first to be taken and calculations made, and the angle at which the tubes must be fixed and their number must also be calculated.

The idea is to put the interior of the wall into direct communication with the external air, and for this purpose the tubes are inserted to half the thickness of the wall, and the angle of these siphons is so calculated that an efficient circulation of air to the wall's interior is maintained until the hygrometric difference is reduced. To prevent the formation of moulds, fermentation, etc., a special compound is employed which causes the formation of nitrates, etc., and prevents the decay of organic matter in the mortar. When applied to those portions of poles which are liable to decay, Mr. Knapen encloses these in a concrete bed and a metal casing as shown. The casing is carried above the ground with a hood to throw off any water running down the pole and the porous tube; the portion of the post between casing and post being encased in a special preparation.

Reinforced Brickwork. THE pioneer of reinforced brickwork was Cottancin, a French engineer, whose ingenious system was fully described in our Students' Column of January—June, 1905. More recently the claims of reinforced brickwork have been advocated by two or three specialist firms in this country, and used with considerable advantage in the construction of walls and floors in industrial and other buildings. The latest application of the same principle is exemplified by various river and canal banks in France, which are faced with reinforced brickwork, as illustrated in Figs. 1 and 2. The bricks are pierced by two holes for galvanised iron or copper wires, and are set as follows:—The slope to be protected is finished to the required gradient, and the reinforcing wires are secured to a cable stretched along the bottom of the slope. The free end of

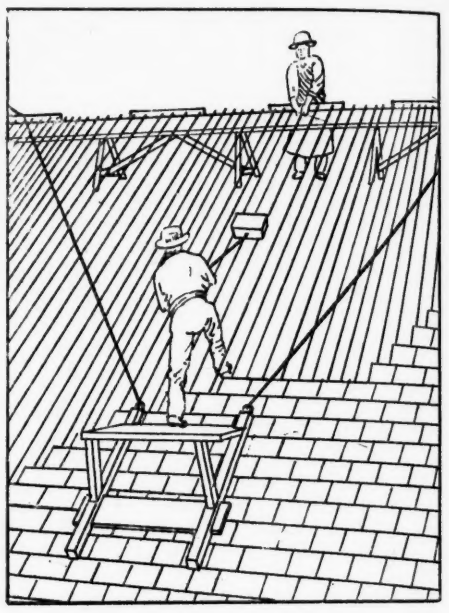


Fig. 1. Laying Reinforced Brick Slope.

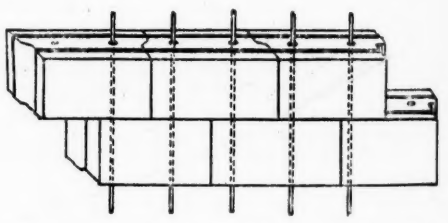


Fig. 2. Details of Reinforced Brickwork.

each wire is then attached to a horizontal frame at the top of the slope, where the bricks are threaded on the wires and slid down to the bricklayers. When the work has passed beyond reach from ground level the layers stand upon a small platform, as shown in Fig. 1, and on completion of the facing the upper ends of the wires are securely anchored. The system of reinforced brickwork here briefly described has been adopted on the Île des Ravageurs at Asnières, on the Sensée Canal, near Aneux, and in the Vaux Valley near Pontoise. It has also been found useful as a means of protecting sand-dunes at the Pointe de Grave and at Sonlac.

Method of Obviating Deflection in Beams. A PARTICULARLY ingenious method introduced by Mr. W. Love, of 42, Claremont-square, N., as an improvement for sheet metal rolling is also applicable to beams of all kinds employed in building construction. To explain the principle of the invention in as few words as possible, we give in Fig. 1 a diagram showing an equilibrated roller used in sheet metal work. The roller *a* may be taken as equivalent to a beam supporting a brick wall which it is desired to support equally without sagging at the middle. Four bearings, *b*1 to *b*4, are placed at convenient distances apart, and these are carried by the beam *c*, in turn supported by the bearings *d*1 and *d*2, so that the ends form short cantilevers, the two bearings resting on a second beam, *e*, supported at the ends by two other bearings. The broken lines indicate the deflection in the three beams, *a*, *c*, and *e*.

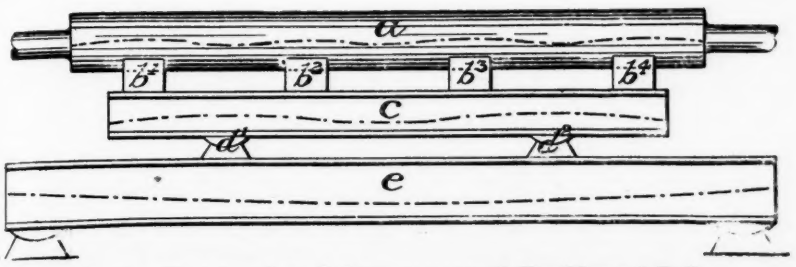


Fig. 1. Showing Actual Arrangement of Equilibrated Roller.

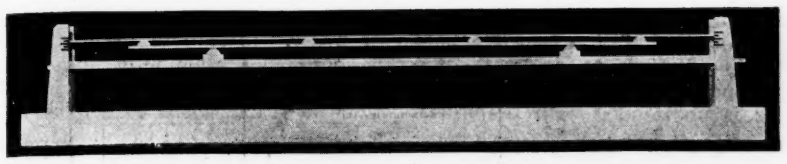


Fig. 2. System of Supporting Beams.

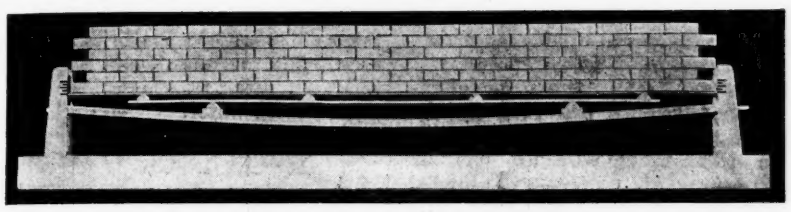


Fig. 3. System of Beams. Loaded, Top Member Straight.

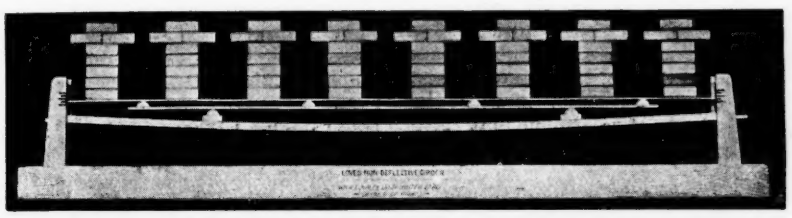


Fig. 4. System with Uniform Separated Loads.

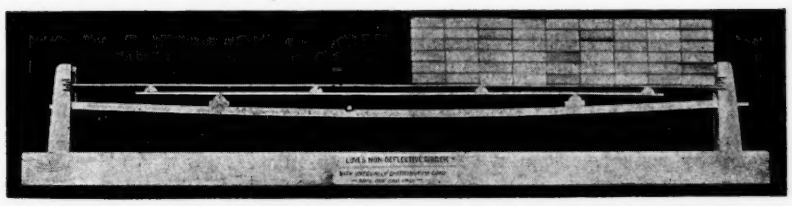


Fig. 5. Love's System with Half Load.

It will be seen that the middle sag in *e* is reduced to a less marked triple wave, with two upward and one downward curve, in *c*, and that in *a* the deflection is broken up into four upward and three downward curves. Thus, although deflection certainly occurs in two directions, undesirable middle sag in beam *a* is quite eliminated as the wavelike deflection approximately follows a straight line.

The practicability of adopting the principle in building construction is shown by Figs. 2 to 5, these being reproduced from photographs of an experimental model, where thin laths were applied as beams for the purpose of making the deflection of the bottom lath and the settlement of the top lath quite perceptible.

Fig. 2 represents the series of beams unloaded, the top one being opposite the second division on the end scales. Fig. 3 shows the model carrying a wall which has caused the top beam to subside down to the level of the bottom division on the scales, but without perceptible sagging or deflection of any kind. Fig. 4 denotes the effect of load, consisting of several isolated piers, and Fig. 5 the effect of loading at one end of the top beam. In the last two views the use of a straight-edge will enable the reader to see the nature of the deformation caused.

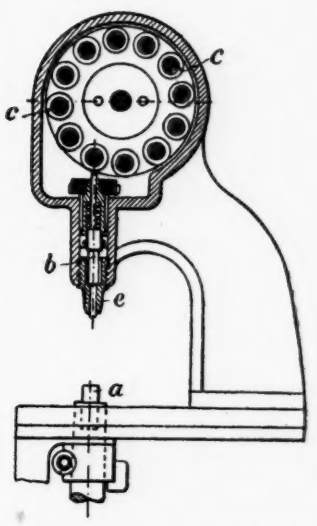
The principle of Mr. Love's invention is most interesting and suggestive, but the method is not likely to supersede ordinary practice, save perhaps in exceptional circumstances where great accuracy and uniformity of settlement are of supreme importance.

Covered Footbridge over a Street.

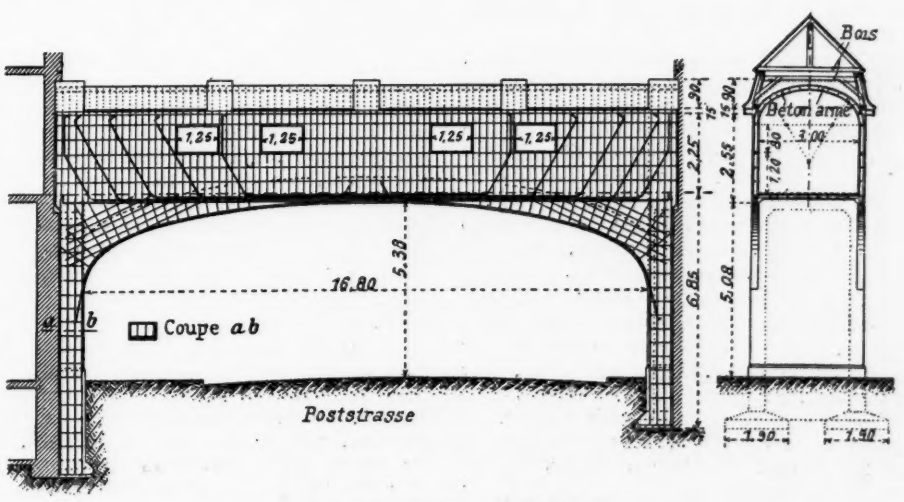
AT Myslowitz, in Upper Silesia, a reinforced concrete footbridge has been built over Poststrasse in order to enable workmen and emigrants to pass direct from the railway station to the opposite side of the street. The bridge, represented by two sections, reproduced herewith from "Beton u. Eisen," is formed by a pair of girders, with the span of 16·8 metres, spaced 3 metres apart, these girders being extended at the under side by arched haunches, and connected at the top by an arched roof. As they are also connected by the floor beams and slab, the construction is virtually that of a tubular girder. The supports consist of reinforced concrete columns on footings of the usual type, and the clear headway under the middle of the bridge is 5·38 metres. Openings are left in the side walls for windows, and the top of the tubular bridge is covered by a timber-framed tiled roof as a protection against extremes of heat and cold. Although fulfilling a distinctly useful purpose, this bridge can scarcely be characterised as a thing of beauty.

Rapid Riveter for Light Work.

THE small riveting machine illustrated on this page is made by the Townsend Manufacturing Company, of Hartford, U.S.A. It consists of a die *a* moving vertically upon which is placed the head of the rivet, a snapping-tool *b* in the socket *e*, and under pressure from the spiral spring shown, and a series of masses *c*, each fitted eccentrically upon a horizontal axis attached to a rotating disc. When the disc is in rapid rotation the masses are thrown out eccentrically by centrifugal force, and come successively into contact with the top of the snapping-tool *b*. The latter is provided with a device causing it to rotate slowly so as to insure regularity of action, while the socket *e*, turning in the screwed outer casing, serves as a gauge indicating the bottom limit of the snapping-tool. To close a rivet the head is placed on *a*, which is moved up so as to make contact between the rivet end and *b*, the latter being raised thereby so as to bring its upper end under the influence of the eccentrics *c*. After closing the rivet *a* is allowed to drop and *b* is depressed by the spring, thus moving its end below the range of the eccentrics and obviating the necessity for stopping the rotation of the disc.



Rapid Riveting Machine.



Covered Footbridge at Myslowitz.

THE BUILDING TRADE.

EFFLORESCENCE ON BRICKWORK.

THE film of earthy salts which frequently appears on the surface of brickwork, and is known as efflorescence, detracts considerably from the pleasing appearance of the work, while the crystallisation of salts within the pores of the bricks tends to cause disintegration by action akin to that established by frost. Moreover, efflorescence may cause damp places on the structure affected, destroying plaster and paint applied after the process has commenced.

Efflorescence may be due to the presence of undesirable material either in the bricks or the mortar, or in both. Although far more common on quite new than on older walls, the deposit may be formed on any brick surfaces liable to be affected by the infiltration of water, and is always at its worst near eaves, rainwater heads, window sills, and other places where rain is afforded opportunity for soaking into the bricks.

The deposit is generally white, but may be yellow or green, according to the composition of the clay used in brickmaking. It is merely a film of soluble salts carried by water from the interior to the exterior of the bricks, and made evident by crystallisation on evaporation of the water.

Chemical analysis shows that the composition of the crystals varies considerably according to circumstances. They generally consist of sulphates, such as potassium sulphate (K_2SO_4), sodium sulphate (Na_2SO_4), calcium sulphate ($CaSO_4$), magnesium sulphate ($MgSO_4$). In bricks made from clay found near the sea, chlorides are sometimes present, as potassium chloride (KCl) and sodium chloride (NaCl); while other clays furnish compounds such as potassium carbonate (K_2CO_3), sodium carbonate (Na_2CO_3), sodium nitrate ($NaNO_3$), ferrous sulphate ($FeSO_4$), and aluminium sulphate (Al_23SO_4).

With the exception of calcium sulphate, all the salts mentioned are readily soluble in water, most of them exceedingly so, as may be seen by the following table :—

Salt.	Solubility in cold water.
Potassium sulphate	1 in 12
,, chloride	1 in 3
,, carbonate.....	1 in 1
Sodium sulphate.....	1·18 in 1
,, chloride	1 in 3
,, carbonate	1 in 2
,, nitrate.....	1 in 1
Calcium sulphate	1 in 500
Magnesium sulphate.....	1 in 3
Ferrous sulphate	1 in 2
Aluminium sulphate	1 in 2

Notwithstanding the relative insolubility of calcium sulphate, this compound is the most fruitful cause of efflorescence, which is far less readily washed off by rain than that resulting from the more soluble salts.

The existence of efflorescent substances in bricks is due to one or more of the following conditions :—

(1) The use of clay containing soluble salts.
(2) The use of clay tempering water containing soluble salts.
(3) The formation in the kilns of soluble salts by the oxidation of minerals in the clay, or by the reaction of sulphurous kiln gases on the clay.
(4) The introduction of soluble salts into the bricks after burning, generally from the mortar employed.

Surface clays usually exhibit a higher percentage of earthy salts than other deposits, and the same may be said of clay which has been covered by sea water, clay containing iron pyrites, or ferric desulphide (FeS_2) being another undesirable variety.

Even in cases where the clay is of approved quality, foreign substances of deleterious character are sometimes introduced which result in the formation of salts giving rise to efflorescence. One example of such treatment is the use of ashes with the object of preventing shrinkage, and another is the adoption of sulphurous coal for burning.

It also happens occasionally that kiln-burnt bricks are impregnated with soluble salts either in consequence of badly-designed plant, or of inefficient management. Thus, after the dried bricks have been "crowded" into the kiln and the process of heating up has been commenced, if the fires are kept only just high enough to evaporate the misture in proportion to the chimney draught, the process is unattended with prejudicial conditions. But if the moisture is evaporated too rapidly for the capacity of the shaft, the surplus vapour in contact with the bricks may absorb sulphur from the gases, resulting in the formation of sulphuric acid, which by combination with the carbonates and other salts will give rise to soluble sulphates, the most general cause of efflorescence.

Various methods are adopted for eliminating substances calculated to give unsatisfactory results. In clays capable of vitrification the risk of efflorescence can be obviated by thoroughly vitrifying the bricks, and thereby converting objectionable salts into permanent silicates.

Clays known to contain soluble earthy salts can be rendered harmless by washing, but this method is commercially impracticable in the case of low-priced bricks. By exposing such clays to the weather for six months or more, rain and snow are utilised as cleansing agents, although it must be noted that this mode of treatment may have the effect of converting insoluble into soluble salts.

Chemical treatment is a more scientific expedient, performed in the case of clays prepared by the wet process by adding to the water used in the washmill such chemicals as will react upon the soluble sulphates and precipitate harmless compounds, the chemicals most generally employed being barium chloride and carbonate resulting in the precipitation of barium sulphate ($BaSO_4$), which is the only soluble to the extent of 1 part in 400,000 parts of water by weight. Even if soluble sodium salts are present, they would simply be converted into carbonate or chloride by the corresponding barium compounds, and being very soluble these salts would be removed by rain quite readily if brought out by efflorescence on the surface of brickwork.

Chemical examination and purification of the water used in brickmaking are quite as necessary as treatment of the clay. Being perfectly simple and very inexpensive, the operation should never be neglected as good clays are frequently contaminated by saline water.

Efflorescence resulting from the introduction of soluble salts into the bricks after burning is usually due to the use in mortar of lime containing magnesia and other bases, which enter into combination with sulphur in the fuel employed for calcination, and form soluble sulphates. These are dissolved by water during the process of mortar mixing, and often find their way into the bricks, emerging later as efflorescence. Similar trouble may also be occasioned by the action of sulphurous gases from coal and coke burned in stoves for warming buildings, the effect being to form sulphates which may appear on the surface of the exterior brickwork.

From the foregoing it is evident that efflorescence can be absolutely avoided by the employment of suitable bricks and mortar, by taking care to see that roofs, cornices, and gutters are watertight, and by preventing leakage of any kind from steam and water pipes carried in ducts within the walls.

In cases where efflorescence occurs despite all reasonable precautions, the first thing to do is to stop any leakage of water into the brickwork, and if the trouble is caused by the penetration of rain from the outside the surface may be treated by the application of alternate washes of soap and alum solutions, the former in the proportions of 2·2 lb. of hard soap per gallon of water, and the latter in the proportions of 1 lb. of alum per gallon of water. Instead of using common alum or potassium aluminium sulphate ($K_2Al_4SO_4$) it is more economical and at the same time more efficacious to employ aluminium sulphate (Al_23SO_4) in the alum wash.

Surface deposits due to calcium sulphate, and, therefore, not carried away by rain, can be removed by scrubbing the face of the work with hydrochloric acid diluted with about five times its volume of water. Before the acid is applied the brickwork should be thoroughly moistened, and all traces of acid removed, after treatment, by washing the surface with water.

INSURANCE AGAINST UNEMPLOYMENT.

AN actuarial Report on unemployment insurance has just been issued by Mr. Thomas G. Ackland, Fellow of the Institute of Actuaries, to which we shall have occasion to refer in greater detail on a future occasion. As regards the building trade the data of unemployment are obtained to some extent from the percentages returned by the trade unions to the Board of Trade. These returns relate to some 300,000 workmen, and cover a period of twenty years, but the Report states, as we have pointed out in these pages, that these returns take no account of very important sections of the trade, viz, bricklayers, plasterers, painters' labourers, to whom no unemployed benefit is paid, the returns being chiefly concerned with only carpenters and plumbers. For all classes together it is interesting to note the percentage of unemployment based on census of 1901 is taken approximately as double of that of carpenters and plumbers alone. The figures thus estimated give 8·6 per cent. of unemployed, or 26·8 days per head per annum as the mean for twenty years 1891-1910. The average rate in the building trade is given as 10·4 per cent., or 32·4 days per head per annum, and in the engineering group 6·5, or 20·3 days.

The estimated period to be covered by benefit is 23·0 days in the building trade, and 14·4 days in the engineering trade.

The average contribution available for benefit is estimated at 1*l.* a head per annum, and the cost of benefit at 18s. 3d., but a somewhat greater margin is anticipated.

It will be seen that the calculations are somewhat problematic, as the figures of unemployment, except in the case of carpenters and plumbers, are not extended over a long period, and are not very complete. In addition to this we would point out that a large body of unemployed are not included in any returns, as in times of acute distress the workpeople cease to contribute to unions or other societies, and they are then unrecorded. We shall again revert to this subject.

THE BUILDING TRADE.

IN his Budget statement the Chancellor of the Exchequer is reported as having said: "What about the building trade? That was the trade which was marching to its doom. In April, 1909, we had unemployment very high in that trade; it was 11·4. It had now come down to 5·1. There is a steady improvement, and the present is the lowest figure in the building trade for eight years." We do not know where these

figures were obtained from, but it seems as if they only applied to carpenters and joiners. In the Board of Trade *Labour Gazette* the figures for carpenters and joiners at the end of April, 1909, were given as 11·0 per cent. unemployed, and in the *Gazette* for April last the figure for March was 5·4, but these branches do not represent the building trade as a whole. The percentage of plumbers unemployed in April, 1909 was 14 per cent., and in March last it was 10·4. The trade union returns as to unemployment published in the Abstract of Labour Statistics refer only to carpenters and joiners, and to plumbers, as unemployed benefit is not, as a rule, paid in other branches of the trade, and therefore it is difficult to ascertain the position of the trade as a whole.

We are duly appreciative of the improvement, such as it is, which is apparent at length in the building trade, but the Chancellor of the Exchequer has always appeared to us not to be sufficiently impressed with the extent of the depression which has so long prevailed in this trade, or its causes.

LONDON MASTER BUILDERS' ASSOCIATION.

THE monthly meeting of the Council of this Association was held at Koh-i-Noor House, Kingsway, on the 18th inst. Mr. G. Bird Godson, President, in the chair, supported by a large number of members.

Reference was made to the Home Office departmental inquiry into lead poisoning, and the evidence on the subject to be supplied.

It was reported that the House of Lords decided in favour of the builder in the final appeal case of Roberts *v.* Hickman. The financial assistance voted to Messrs. Roberts, in the event of their case not being successful, will, therefore, not be claimed. Great interest has been aroused by this case greatly affecting the interests of architects and builders.

The effect of the National Insurance Bill upon the trade was fully discussed, and the Council was unanimously of opinion that if the additional burdens set forth in the Bill are to be imposed upon the trade, employers would be glad to see the principle extended so that their present risks, under the various Employers' Liability Acts, should be included in one payment, and the Associations' representatives on the Employers' Parliamentary Council were requested to do their best to attain this end.

A further election of new members followed.

GOVERNMENT CONTRACTS.

THE following tenders have been accepted by the Government Departments named:—*Admiralty* (*Works Department*): Works service, erection of store, etc., at Cleethorpes Wireless Telegraphy Station—Messrs. Hewins & Goodhand, Eleanor-street, Grimsby. *Admiralty* (*Contract Department*): Water-closets—Messrs. Wallace & Connell, 65, McAlpine-street, Glasgow; Messrs. Shanks & Co., Ltd., Tubal Works, Barhead, Glasgow; Messrs. Doulton & Co., Ltd., Albert-embankment, S.E.; Leeds Fire Clay Company, Ltd., Wortley, Leeds. *Greenwich Hospital* (*Admiralty*): New cottages, Bovills Hall Farm—Messrs. Johnson & Hawkes, Clacton-on-Sea, Essex. *War Office*: Works services, aeroplane shed, Salisbury Plain—Mr. W. Harbrow, South Bermondsey Station, S.E.; generating-station, Curragh Camp—Mr. H. Laverty & Sons, Ltd., 12, Cambridge-street, Belfast; new barrack blocks and stables, Castle Park Barracks, Dunbar—Messrs. W. S. Cruikshank & Son, Lower Gilmore-place, Edinburgh; repairs and maintenance of W.D. buildings, etc., at:—Benoik, Messrs. M. Gray & Sons, 65, Ravensdowne, Berwick-on-Tweed; Bradford, Messrs. A. Bagnall & Sons, Shipley, Yorks; Brighton, Messrs. J. Olliver & Sons, 1A, St. Mark's-street, Brighton; Chichester, Mr. E. Turner, 32, Franklin-place, Chichester; Strensall, Mr. R. J. Pulleyn, The Poplars, Earswick, Huntington, Yorks; Winchester, Mr. J. Hunt, Cleveland-road, Gosport; rifle range, etc., Ballycannon, Limerick—Mr. M. Gough, Coloony-street, Limerick; structural steelwork for gantry, Woolwich Arsenal—Messrs. E. C. & J. Keay, Ltd. Corporation-street, Birmingham. *Crown Agents for the Colonies*: Cement — Associated Portland Cement Manufacturers, Lloyd's-avenue, E.C.; steelwork for pier—Messrs. Cochrane & Co. (Woodside), Ltd., Woodside Ironworks, Dudley; steelwork for bridges (three contracts)—the Horsehay Company, Ltd., Horsehay, Salop. *Office of Works*: Maintenance contracts—London, North District—Messrs. Leslie & Co., Ltd., Kensington-square, W.; London, South District—Messrs. Leslie & Co., Ltd., Kensington-square, W.; Sheffield—Messrs. Ash, Son, & Biggin, Ltd., Furnival-street, Sheffield; builders' work at new Telephone Exchange, Sevenoaks—Messrs. F. Webster & Son, Grove Vale Works, East Dulwich, S.E.; road materials, Royal parks—Messrs. John Mowlem & Co., Ltd., Grosvenor Wharf, Westminster, S.W.; Mr. C. W. Carpenter, 66, Queen-street, Hammersmith, W. *Prison Commission*: Building materials for masons, bricklayers, plasterers, and slaters—Messrs. Avery Bros., Staple-gardens, Winchester; Mr. J. W. Baird, Higher Town, Knutsford; Messrs. W. Bell & Sons, 2, Downing-street, Cambridge; Mr. F. Bennett, New-street Works, Ipswich; Messrs. J. T. C. Brown & Sons, Bodmin; Mr. S. Buy, Westgate-road, Newcastle; Messrs. Caldwell & Almond, Plymouth; Messrs. Carter Bros., 150, Castleton-road, Preston; Mr. Osman Cooban, Bedford-road, Walton, Liverpool; Mr. C. Cooke, St. Owen-street, Hereford; Messrs. J. Corby & Son, 27, Tavistock-street, Bedford; Mr. P. W. Cox, Grove-lane, Handsworth, Birmingham; Mr. G. Crook, 65, Henry-street, Wakefield; Messrs. Goddard & Co., G.N.R. depôt, Caledonian-road, N.; Mr. J. Hayes, Monks-building Works, Shrewsbury; Messrs. Johnson & Hawkes, New-street, Chelmsford; Messrs. T. H. Kingerlee & Sons, 35, Queen-street, Oxford; Messrs. A. Knowles & Co., Pipe-lane, Bristol; Messrs. Lacey & Lincoln, 32, Giles-street, Norwich; Messrs. Landsdown & Son, Melville-street, Lincoln; Messrs. W. Marshall & Sons, 250, Old-street, E.C.; Messrs. W. Maule & Co., Huntingdon-street, Nottingham; Messrs. J. Milsom & Sons, Portland Wharf, Reading; Mr. J. Moore, 341, Holderness-road, Hull; Messrs. C. M. Moxham & Co., Swansea; Messrs. C. J. Nevitt, Ltd. Bailey-street, Stafford; Mr. W. T. Nicholls, 10, St. Paul's-road, Gloucester; Mr. J. J. Patten, Portland; Messrs. Radcliffe & Son, 8, Birch-lane, Manchester; Mr. E. A. Rogers, 15, Queen-street, Carmarthen; Messrs. Smith & Marchant, Shepton Mallet; Messrs. J. Stockdale & Son, South End, Northallerton; Messrs. Stocombe, Whitenham, & Co., Cardiff; Messrs. Ward & Cannon, Aylesbury; Messrs. W. Webb & Co., Railway-street, Chatham; Messrs. Westcott, Austin, & White, Exeter; Mr. E. Whittaker, 76, Wellingborough-road, Northampton; Messrs. W. Winter & Sons, Ltd., Blackfriars-road, Southsea; materials for carpenters and joiners—Messrs. Ashbee, Sons, & Co., Bristol-road, Gloucester; Mr. J. T Baird, Higher Town, Knutsford; Mr. R. Bayley, Plymouth; Messrs. W. Bell & Sons, 2, Downing-street, Cambridge; Mr. F. Bennett, New-street Works, Ipswich; Messrs. C. Bessent & Sons, Chatham; Messrs. T. Brewer & Co., 145, Clapham Park-road, S.W.; Messrs. J. T. C. Brown & Son, Bodmin; Mr. S. Buy, Westgate-road, Newcastle; Mr. Osman Cooban, Bedford-road, Walton, Liverpool; Mr. C. Cooke, St. Owen-street, Hereford; Mr. G. Crook, 65, Henry-street, Wakefield; Messrs. G. Duxbury, 73, Church-street, Leicester; Mr. J. Elgey, Gilesgate, Durham; Mr. H. A. Evans, Goldsmith-avenue, Portsmouth; Messrs. Johnson & Hawkes, New-street, Chelmsford; Messrs. T. H. Kingerlee & Sons, 35, Queen-street, Oxford; Messrs. Landsdown & Sons, Melville-street, Lincoln; Messrs. Maddocks & Tundley, Ltd., Butler-street, Oldham-road, Manchester; Messrs. W. Marshall & Son, 256, Old-street, E.C.; Mr. J. Moore, 341, Holderness-road, Hull; Messrs. C. M. Moxham & Co., Swansea; Mr. E. Musgrove, 16, Court-street, Carlisle; Messrs. F. C. I. Nevitt, Ltd., Bailey-street, Stafford; Mr. W. T. Nicholls, 10, St. Paul's-road, Gloucester; Mr. T. Pace, Shrewsbury; Mr. E. Parry, Ty Gwyn, Llanbelie, Carnarvon; Messrs. G. Perrin & Co., Bristol; Mr. S. Roach, Plymouth; Mr. G. A. Rogers, 15, Owen-street, Carmarthen; Messrs. S. Shapton & Son, Sandon-road, Cardiff; Messrs. Smith & Marchant, Shepton Mallet; Messrs. J. Stockdale & Son, South End, Northallerton; Mr. W. G. Storey, 17, Dungall-street, Dorchester; Mr. J. Walker, Wesley-place, Leeds; Messrs. Walker & Slater, Uttoxeter Old-road, Derby; Messrs. Ward & Cannon, Aylesbury; Messrs. Webb, Major, & Co., Weymouth; Messrs. Westcott, Austin, & White, Exeter; Mr. E. Whittaker, 76, Wellingborough-road, Northampton; Messrs. Wise & Landell, Ltd., 9A, Jewry-street, Winchester. *General Post Office*: Alterations to low-pressure heating system at G.P.O. (west), London, E.C.—Messrs. H. J. Cash & Co., Ltd., Caxton House, Westminster, S.W. *Commissioners of Public Works, Ireland*: Building works, erection, Tonragee National School, Co. Mayo—Messrs. P. J. Gilmartin, Ballina.

GENERAL BUILDING NEWS.

NEW CHURCH, HONLEY.

This church, designed by Messrs. W. J. Morley & Son, architects, of Bradford, has been erected at a cost of over 4,000*l.*, and was opened last week.

RENOVATION OF CHURCH, STRATHBOGIE.

An extensive scheme for the restoration of this church has been proposed, and the designs have been prepared by Mr. William Kelly, architect, of Aberdeen, and Mr. T. G. Archibald, architect, of Huntly.

NEW CHAPEL, CARDIFF.

The building has been erected at a cost of 5,300*l.* from plans prepared by Messrs. Habershon, Fawckner, & Co., architects, of Cardiff. The contract was carried out by Mr. James Stephens, builder, of Canton, and the electric lighting by Messrs. A. G. Arnold & Son, of Newport. The heating apparatus was supplied by Messrs. Hampton & Co., of Cardiff.

NEW SCHOOL BUILDINGS, WINCHESTER.

The additions to the elementary school have been erected from plans prepared by Mr. N. C. H. Nisbett, architect, and the builder was Mr. W. T. Fennell.

TECHNICAL COLLEGE, ABERDEEN.

The Governors of Robert Gordon's Technical College propose to reconstruct those portions of the college that were destroyed by fire in March last, and plans for the scheme have been submitted by the architect, Mr. J. A. Ogg Allan. The estimated cost of the extensions is 8,500*l.*

INFIRMARY, PONTYPRIDD.

It has been proposed by the local Board of Guardians to erect an infirmary and also better nursing accommodation; accordingly, Messrs. Thomas & Morgan, architects, of Pontypridd, have been asked to prepare plans for the scheme.

SHAFTESBURY CLUB, BIRKENHEAD.

The foundation-stone of this building was laid last week, and the estimated cost of the erection is 2,500*l.* The architects are Messrs. Morter & Dobie, of Liverpool.

NEW CLUB, NEWCASTLE.

The Northern Conservative Club was opened last week by the Right Hon. Arthur James Balfour, M.P., and has been erected from the plans of Messrs. Cackett & Burns Dick, FF.R.I.B.A.

INSURANCE BUILDINGS, ABERDEEN.

These buildings are being erected for the Royal Insurance Company, Ltd., from plans prepared by Mr. G. Bennett Mitchell, architect. The contractor for the work is Mr. Alexander Anderson.

EXTENSIONS TO GENERAL POST-OFFICE, NEWCASTLE.

The extensions to this building have been carried out by Messrs. Kirk & Brow, contractors, of Newcastle, from plans prepared by the architect, Mr. W. Pott, A.R.I.B.A., and the heating apparatus has been installed by Messrs. Richardson & Co. of Darlington.

FIENMAN YIDDISH PEOPLE'S THEATRE, COMMERCIAL-ROAD, LONDON.

A theatre is being erected in Commercial-road for the production of Yiddish plays only. Messrs. Geo. Billings, Wright & Co., surveyors, etc., Blomfield House, London-wall, E.C., London, have been appointed architects for the entire scheme, plans of which have now been prepared and approved by the London County Council, and the work has been commenced.

VILLAGE INSTITUTE FOR MOUNTAIN.

Mr. John Speak, of Kirton, near Boston, Lincolnshire, is about to erect and furnish buildings at Mountain, Queensbury, near the Co-operative Stores, to be used as a village institute. Reading-rooms, tearooms, billiard-rooms, baths, gymnasium, etc., will be provided. Mr. Herbert Hodgson, A.R.I.B.A., Bradford, has been instructed to prepare plans for the building, which will have a frontage to the Denholme and Brighouse-road.

TRADE NEWS.

We understand that the shareholders of the British Reinforced Concrete Engineering Company, Ltd., of 196, Deansgate, Manchester, have sanctioned an increase of capital warranted by dividends and profits on works in hand. The secretary has reported the acceptance of several contracts in Britain and a large increase of foreign orders.

Under the direction of Mr. J. L. Carnell, architect, of King's Lynn, Boyle's latest patent "air-pump" ventilators have been applied to the new secondary schools, East Dereham.

The Yost Typewriter Company, Ltd., have received the Warrant of Appointment as

typewriter manufacturers to her Majesty the Queen. This company already holds a similar Warrant to his Majesty the King.

A large clock has just been erected on the parish church, Elland, Yorkshire, which shows time on four 7-ft. illuminated dials, strikes the hours, and chimes the Westminster quarters. It has been erected by Messrs. John Smith & Sons, of Derby, generally to the designs of the late Lord Grimthorpe.

The new infirmary, Cardiff, is being supplied with Shorland's double-fronted patent Manchester stoves with descending smoke flues and patent Manchester grates by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

The police-station at Long Stratton, Norfolk, has recently been fitted with one of D. O. Boyd's "Hygiastic" ventilating grates, supplied by Messrs. O'Brien, Thomas, & Co., Upper Thames-street, London, E.C. and Excelsior Works, Rollins-street, S.E.

A DECEASED BUILDER'S ESTATE.

The estate of the late Mr. James Haswell, of Westcott-street, Hull, builder and contractor, who died on March 16, is of the gross value of 28,470*l.*

APPLICATIONS UNDER LONDON BUILDING ACTS, 1894 to 1909.

AT Tuesday's meeting of the London County Council the following applications under the London Building Acts were dealt with (the names of the applicants are given in parentheses):—

Lines of Frontage and Projections.

Bow and Bromley.—Erection of a building on the western side of Violet-road, Poplar, northward of Barchester-street (Mr. A. Stapley for Messrs. Engert & Rolfe, Ltd.).—Consent.

Hackney, Central.—Erection of a building at the rear of No. 10, De Beauvoir-square, Hackney, to abut upon the eastern side of Mortimer-road (Mr. W. O. Brown).—Consent.

Holborn.—Retention of a wooden step ladder in the front area of No. 12, Bloomsbury-square, Holborn (Mr. C. F. Doll for Messrs. Needham, Tyer, & Barrow).—Consent.

Islington, North.†—Erection of buildings on the southern side of Hornsey-lane, Islington (Mr. W. Hollis).—Consent.

Lewisham.—Two one-story shops in front of No. 106, High-road, Lee (Mr. F. L. Poole for Mr. H. Beckmann).—Refused.

Marylebone, West.—Bay window at No. 5, Circus-mews, Circus-street, St. Marylebone (Mr. H. D. Searles Wood for Dr. Wynter Blyth).—Consent.

Westminster.—Iron and glass enclosures to the porch in front of No. 39, Princes-gate, Westminster (Mr. E. W. Long for Colonel A. K. Wyllie, C.B.).—Consent.

Width of Way.

Deptford.—Addition at the rear of No. 62, High-street, Deptford, with a boundary fence (Messrs. Humphreys, Skitt, & Humphreys).—Consent.

Width of Way and Lines of Frontage.

St. George, Hanover-square.—Porch at No. 3, Wilton-terrace, Westminster, next to Motcomb-street (Mr. H. E. Martin for Mr. R. T. Hinckes).—Refused.

Width of Way and Height of Building.

Westminster.—Addition at the rear of the Surveyors' Institution, Great George-street, Westminster (Mr. P. Waterhouse for the Surveyors' Institution).—Consent.

Width of Way and Construction.

Kensington, South.—Temporary studio at the rear of No. 6, Phillimore-terrace, Allen-street, Kensington (Mr. E. C. Beaumont).—Consent.

Lines of Frontage and Construction.

Peckham.—Temporary show-case in front of No. 2, Rye-lane, Peckham (Messrs. Windybank, Samuell, & Lawrence).—Consent.

St. George, Hanover-square.—Iron and glass shelter in front of the entrance to the Æolian Hall, Nos. 135 and 137, New Bond-street (Mr. W. Cave for the Orchestrelle Company).—Consent.

Strand.—Iron and glass shelter at the entrance to the St. James's Palace Hotel, Nos. 13 to 17, Bury-street, St. James (Mr. P. Hoffmann).—Consent.

Space at Rear.

Chelsea.—Building upon the space at the rear of Thurloe-court, Nos. 117 to 135, Fulham-road (Mr. J. A. J. Keynes).—Consent.

Space at Rear and Alteration of Buildings.

Paddington, North.—Addition at the Children's Hospital, Paddington Green (Mr. A. E. Munby for the Committee of the Hospital).—Consent.

Strand.—Alterations and additions at Derby House, St. James's-square, Westminster (Messrs. Edmeston & Gabriel for the English and Scottish Law Life Assurance Association).—Consent.

Buildings for the Supply of Electricity.

Finsbury, East.—Additions to the building of the County of London Electric Supply Company, Ltd., next to Graham-street, City-road, Finsbury (Mr. C. S. Peach).—Consent.

Width of Way and Formation of a Way.

Hammersmith.—Factory building upon a site at the rear of houses on the western side of Hetley-road, Hammersmith (Mr. A. Casse).—Consent

Formation of Streets.

Fulham.—Street to be used as a private roadway (Mr. A. Dawkins for Mr. R. B. Mason).—Consent.

Alteration of Buildings.

City of London.—Alterations and additions at premises abutting upon Newgate-street, Warwick-square, and Phœnix-square, City (Mr. C. Stanley Peach for the Oriental Carpet Manufacturers, Ltd.).—Consent.

Conversion and Uniting of Buildings.

Dulwich.—Uniting of Nos. 203 and 205, Camberwell-grove, Dulwich, and the conversion of such premises into flats (Messrs. Bromiley & Sames for Mr. W. Beecroft).—Consent.

Cubical Extent.

Islington, North.—Erection of a motor omnibus garage approached from the northern side of Holloway-road, Islington (Mr. J. E. Ashby for the London General Omnibus Company).—Consent.

Marylebone, East.—Building with divisions exceeding 250,000 cubic feet in extent (Mr. J. Murray for Messrs. D. H. Evans & Co., Ltd.).—Consent.

Woolwich.—Construction of a temporary iron enclosure at the northern end of the building (Messrs. Siemens Brothers & Co., Ltd.).—Consent.

Uniting of Buildings.

City of London.—Opening between Nos. 11 and 13, Eastcheap, City, at the third-floor level (Mr. A. R. Westworth for Sir J. Causton & Sons).—Consent.

City of London.—Opening between No. 5, St. James's-place and No. 31, Creechurch-lane, City, at the second-floor level (Mr. W. T. Lowdell for the Exchange Telegraph Company).—Consent.

City of London.—Nos. 39, St. Mary Axe, and No. 13, St. Helen's-place, City (Mr. H. Chatfeild Clarke for the Worshipful Company of Leathersellers).—Consent.

City of London.—Additional opening in the party wall between Nos. 99 and 101, Cannon-street, City (Messrs. Hennell & Son for Mr. J. Layton).—Consent.

City of London.—Two openings, of larger area than specified in the said section, between Nos. 143-7 and 148½, Fenchurch-street, City, and the provision of shutters of special construction to such openings (Mr. E. B. Ellis for the Langbourne Ward Estates Company, Ltd.).—Consent.

Kensington, South.—Addition at the rear of No. 42, Church-street, Kensington, and the uniting of Nos. 40 and 42, Church-street, by an opening at the ground-floor level (Mr. F. C. Spiller for Mr. F. W. Parsons).—Consent.

St. George, Hanover-square.—No 37, Wilton-place, Knightsbridge, with a building at the rear, by an opening at the second-floor level (Mr. F. Arthur for Mr. F. C. Barolet).—Consent.

Strand.—No. 110, Long-acre, with a warehouse at the rear, and the erection of an enclosed steel, glass, and concrete gangway between such buildings (Mr. E. A. Shaw for Mr. T. J. Poupart).—Consent.

Whitechapel.—Opening between Nos. 30 and 32, Commercial-street, Whitechapel, at the third-floor level (Mr. A. E. Christy for the Remington Typewriter Company, Ltd.).—Consent.

The recommendation marked † is contrary to the views of the metropolitan borough council concerned.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERDEEN.—Extensions, Union Paper Works (2,500*l.*); Messrs. Jenkins & Marr, architects, 16, Bridge-street, Aberdeen.

Audenshaw.—Elementary school (6,000*l.*); Mr. Hy. Littler, 16, Ribblesdale-place, Preston.

Barking.—The following plans have been passed:—Four houses, Park-avenue, Mr. A. Burch; five houses, Eastbury-avenue, Mr. J. Graffy. A plan has been lodged by Mr. A. E. Boulton for five houses and a shop in London-road.

Barnsley.—Free library (5,000*l.*); Mr. A. B. Collins, 10, Regent-street, Barnsley.

Bishop's Stortford.—Additions at preparatory school; Governing Council of Bishop's Stortford College.

Blackpool.—Congregational Church and School, Victoria-street (10,000*l.*); Mr. Herbert Wade, architect, 27, Birley-street, Liverpool.

Bolton.—Additions to mill, Jackson-street, for Messrs. Cannon Bros.

Bridgeton (Glasgow).—Extensions, Eagle Pottery Works (3,000*l.*); Messrs. J. M. Munroe & Sons, 28, Bath-street, Glasgow.

Bridgwater (Somerset).—Extensions to Eastover Council schools (1,150*l.*); Mr. Parr, Borough Surveyor, Bridgwater.

Brookhill.—Laundry; Architect, care of Mr. F. Horner, Clerk, Board of Guardians, Newton Abbot.

Burnley.—Reconstruction of school, Elizabeth-street (1,600*l.*); Mr. E. Jones, Secretary, Education Committee, Burnley Town Council.

California (Aylesbury).—Extensions to ink works for Messrs. Hazell, Watson, & Viney, Ltd.

Canonby (Glasgow).—Proposed parish hall; Surveyor, Canonby Parish Council.

Cheadle (Staffs).—Alterations and additions to isolation hospital; Mr. W. P. Inskip, Surveyor, Cheadle Rural District Council.

Clitheroe.—School (1,400*l.*); Mr. Hy. Littler, architect, 16, Ribblesdale-road, Preston; Mr. Benjamin Rumb, builder, Todmorden.

Cowdenbeath.—Church (7,000*l.*); Pastor, Chapel of Ease, Cowdenbeath.

Cowes.—Workshops, Thetis-road and Bridge-road, for Messrs. J. S. White & Co.

Denton.—Additions at hatworks, Manchester-road, for Messrs. T. & W. Walker.

Dunfermline.—Women's Institute, Bath-street (7,500*l.*); Mr. A. Welsh, 253, High-street, Kirkcaldy.

Durham.—Addition at St. Hild's College; the Governors.

Edinburgh.—Villas, Murrayfield-gardens (4,000*l.*); Mr. W. H. A. Ross, 21, Castle-street, Edinburgh. Cinematograph hall, Belfrage-court (3,000*l.*); Mr. E. C. Caroe, 129A, George-street, Edinburgh.

Elderslie.—Thorndean House (2,100*l.*); Mr. W. Brown, jun., High-street, Paisley.

Erdington.—Lavatories, pavilion, and keeper's lodge in two parks (1,540*l.*); Mr. A. Hopkins, builder, Sparkhill.

Exeter.—Schools, Okehampton-road (1,000*l.*); Mr. Jas. Jerman, architect, 1, Bedford-circus, Exeter. Collar factory for Messrs. Reed & Co.; Mr. H. Dobell, Queen-street, Exeter.

Falmouth.—Proposed nine flats, Hull's-lane; Mr. W. H. Tressider, Surveyor, Falmouth Town Council.

Farnworth.—School; Mr. H. Littler, County Architect, Preston.

Fordyce.—Additions and improvements to Academy; Mr. John Wittet, architect, Elgin.

Frizinghall.—Extensions to Messrs. White & Co.'s mill; Messrs. Toothill & Balmforth, builders, Bradford

Glasgow.—Extensions to Messrs. Eastman's Stores (5,000*l.*); Messrs. J. B. Wilson & Son, architects, 92, Bath-street, Glasgow. Building, Bath-street; architect, care of Messrs. Copland & Lye, Sauchiehall-street, Glasgow.

Gloucester.—Additions to workhouse (3,000*l.*); Messrs. Jas. Byard & Son, builders, Stroud-road, Gloucester

Govan.—Clubhouse for Burgh Golf Club (2,250*l.*); Mr. Findlay Bain, 93, Hope-street, Glasgow. Additions, school, Lambhill (5,000*l.*); Mr. S. Preston, Superintendent of Works, 155, Bath-street, Glasgow. Extension to engine works of Messrs. Dunsmuir & Jackson, Govan (6,500*l.*). Additions, electricity works (2,000*l.*); Mr. F. G. Holmes, Borough Surveyor, Town Buildings, Govan.

Grantown.—Public offices and shops, junction of High-street and Chapel-road (1,200*l.*); Surveyor, Grantown Town Council.

Great Yarmouth.—The following plans have been passed:—Rebuilding premises, South Denes-road, Messrs. Elliott & Garrood; six houses, Park-road, Gorleston, Mr. F. A. Osborne.

Harrogate.—Woodard School, Killinghall Moor (50,000*l.*); Messrs. Bowman & Sons, Cherry Holt-lane, Stamford, Lincs.

Haslingden.—Proposed school (1,100 places); Mr. W. Musgrave, Secretary, Education Committee, Haslingden Town Council.

Inverkeithing.—School; Messrs. Brydon & Robertson, architects, 147, Bath-street, Glasgow.

Inverness.—Rectory (1,400*l.*); Messrs. A. Ross & Son, Queensgate-chambers, Inverness. Block of cottages, Belladrum (4,000*l.*); Mr. W. L. Carruthers, 17, Queensgate, Inverness.

Kirriemuir.—Drill-hall for Territorials (1,200*l.*); Mr. David Waterston, Glamis, Forfarshire.

Laurencekirk.—Extensions, public school (1,400*l.*); Mr. J. Gregory, Stonehaven. Alterations and improvements to motor works for Mr. Wm. Tavendale.

* See also our list of Competitions, Contracts, etc., on another page.

THE CHURCH BUILDING SOCIETY.

THE annual general court of the Church Building Society was held at the Church House, Dean's-yard, Westminster Abbey, S.W., on the 18th inst., the Bishop of St. David's presiding.

The Committee, in presenting the ninety-third annual report, recorded that towards the end of the year the Society lost the services of one of its Honorary Consulting Architects, Mr. C. Hodgson Fowler, who, in the year 1900, was elected a member of the Committee of Architects, of which he was a zealous and much-valued member. The Committee took the opportunity of thanking the members of the Committee of Honorary Consulting Architects, who gave their services ungrudgingly to the Society in the examination with so much care of the designs submitted to them. The past history of the Society showed that it had been instrumental in aiding in the erection of no less than 2,641 additional new churches, and in assisting in rebuilding, enlarging, or otherwise improving the accommodation in 6,715 other churches or consecrated chapels-of ease. The Committee had pleasure in reporting a still further increase in the number and amount of the funds held on trust by the Society for the repair of churches; the number is now 411, and the amount has reached 109,188*l*. Once more the Committee reminded incumbents and churchwardens of the importance of churches being adequately insured against fire.

Mr. C. S. Spooner, F.R.I.B.A., a member of the Committee of Consulting Architects, gave an address on the work of the Committee. He explained at the outset that the reports which the Committee had, as a rule, to make upon the plans of new churches submitted were nearly always criticisms of detail. Such criticism was always made in a kindly spirit, "but," Mr. Spooner added, "I fear this is not always realised." It was very rarely, however, that the Committee was obliged to say that it could not report on a design, which generally meant that it was so bad that the Society could not contribute towards it. While no one wanted to put any difficulty in the way of building a church, it was, he thought, questionable whether the Committee were not too lenient. "A large number of very poor designs receive the approval and support of the Society month by month—designs which are devoid of dignity, poor and mean in proportion and spacing, feeble, thoughtless, and feelingless in detail and uninteresting in the use of material, and yet comply with the rules of the Society. This is, I fear, strong condemnation, but it is not too strong of a certain number of designs which receive the Society's approval." The matter, Mr. Spooner went on, had been referred to several times before, and he proceeded to quote the opinions expressed by other members of the Architects' Committee in previous years. Could anything be done to raise the standard? This was a matter which needed consideration and discussion, but he appealed to the clergy responsible for new churches to be more careful that the architect selected should be a man who could build a church with dignity and interest. The Church Building Society had set a very reasonable and good standard of building. Its rules had been made by men with great experience of church finance and church building. The rules of the Society did not allow of the cheapest ways of building, and he felt that if the Bishops would require that standard of stability, arrangement, and space as a condition of episcopal sanction to plans, they would very greatly benefit the clergy and churchwardens of the dioceses under their charge, and save waste of money. He condemned the idea of "cheap" churches, knowing that he did so without the risk of being misunderstood. The object of the Church Building Society was to help and encourage people to build a new church. "I am sure that one of the greatest helps the Society gives in contributing to a new church is in saving the promoters from 'penny wise pound foolish' methods of building."

The Society held its usual monthly meeting on the 18th inst. at the Society's House, 7, Dean's-yard, Westminster Abbey, S.W., the Rev. Canon C. F. Norman in the chair. Grants of money were made in aid of the following objects, viz.:—Building the church of St. Gabriel, Bishopwearmouth, Durham, 250*l*.; rebuilding the churches of St. James, Milton, near Portsmouth, 100*l*.; and The Bourne, St. Thomas, Surrey, 70*l*.; and towards enlarging or otherwise improving the accommodation in the churches at Brotherton, St. Edward the Confessor, Yorks, 25*l*.; Hucclecote, St. Philip and St. James, near Gloucester, 30*l*.; Layer Marney, St. Mary the Virgin, Essex, 60*l*.; Mold, St. Mary, Flints, 100*l*.; and Stoke St. Milburgh, St. Milburgha, Salop, 15*l*. Grants were also made from the Special Mission Buildings Fund towards building mission churches at Caergeiliog, near Rhoscolyn, Anglesey, 30*l*.; Heathfield, Sussex, 25*l*.; and Holmer, St. Mary, near Hereford, 25*l*. The following grants were also paid for works completed:—East Cowton, All Saints', near Northallerton, 70*l*.; Birchington, All Saints', Kent, 35*l*.; Tarrant Crawford, St. Mary, Dorset, 50*l*.; and Litherland, St. Andrew, near Liverpool, 40*l*. In addition to this the sum of 90*l*. was paid towards the repairs of ten churches from Trust Funds held by the Society.

THE ROYAL SANITARY INSTITUTE:

ANNUAL DINNER.

THE Royal Sanitary Institute dinner was held in the Langham Hotel, Portland-place, W., on Thursday last week, the Duke of Northumberland, K.G., President, in the chair, supported by:—

Prof. Silvanus P. Thompson, D.Sc., F.R.S., President, Illuminating Engineering Society
Dr. B. A. Whitelegge, B.Sc., H.M. Chief Inspector of Factories, Home Office
Sir G. Laurence Gomme, Clerk, London County Council
Sir Aston Webb, R.A.
Sir Francis Sharp Powell, Bart.
Mr. Edward White, J.P., Chairman, London County Council
Sir Thomas Barlow, Bart., K.C.V.O., F.R.S., LL.D., President, Royal College of Physicians, London
Mr. H. P. Boulnois, Chairman of Council
Mr. H. D. Searles-Wood, late Chairman of Council
The Right Hon. Robt. Farquharson, P.C., M.D., LL.D.
Sir Philip Magnus, J.P., M.P.
Sir Alexander Binnie, M.Inst.C.E.
Surg.-Gen. Gubbins, C.B., M.V.O., Director-General, Army Medical Service
Mr. Henry T. Butlin, D.C.L., LL.D., President, Royal College of Surgeons of England
Sir Shirley F. Murphy, F.R.C.S.
Dr. A. Newsholme, Medical Officer, Local Government Board
Sir Henry Tanner, I.S.O.
Mr. P. C. Cowan, D.Sc., Chief Engineering Inspector, Local Government Board, Ireland
Mr. A. J. Martin, M.Inst.C.E., President, Institute of Sanitary Engineers
Col. J. Lane Notter, R.A.M.C., Treasurer of the Institute
Dr. Louis C. Parkes, Deputy-Chairman of Council
Dr. S. Rideal
Prof A. Bostock Hill
Prof. H. R. Kenwood, Chairman of the Congress Committee
Dr. Wellesley Harris, Chairman of Examination Committee
Dr. H. T. Bulstrode
Dr. W. G. Willoughby, President, Society of Medical Officers of Health
Mr. A. Wynter Blyth
Mr. H. Johnson, Chairman, Sanitary Inspectors' Association
Mr. W. Kaye Parry
Mr. J. Patten Barber
Mr. Edwin T. Hall
Mr. John Slater
Mr. J. Osborne Smith
Mr. A. Saxon Snell
Mr. E. White Wallis, Secretary and Director

The loyal toasts having been honoured,

Mr. Edward White, J.P.,

Chairman of the London County Council, proposed the toast of "The Navy, the Army, and Territorial Forces," coupled with the name of Surgeon-Gen. Gubbins, C.B., M.V.O., Director-General Army Medical Service, who, in reply, said the army had suffered in the past owing to the neglect of sanitary matters; but he was glad to say that they could not be charged with neglect now.

Mr. H. T. Butlin, D.C.L., LL.D., President, Royal College of Surgeons of England, proposed the toast of "The Houses of Parliament."

Sir Philip Magnus, M.P.,

in the course of his reply, said that no Bill, however strenuously opposed or supported it was, did as much harm or as much good as its supporters or its opponents anticipated, and he ventured to think that none of the Acts of Parliament which had been put upon the statute book within the last few years had been more beneficial to the people generally than those which had relation to the public health. As to the proposals for National Insurance, the general principle of the Government Bill had been approved in all quarters of the House of Commons, but it would demand careful and critical investigation not only in the House of Commons, but by the Institute and others. Every effort should be made to improve the measure and to carry out its principles with due economy. No part of the measure was received with more general approbation than those clauses which provided funds for the establishment and maintenance of sanatoria. Altogether, he thought it was a worthy effort of any government to have endeavoured to bring the great blessing of health into the homes of all classes of the people, and to stamp out a disease which year by year took such a heavy toll of victims.

The President

then gave the toast of the evening, "The Royal Sanitary Institute," and he referred to the great progress it had made and was making. The roll of Members and Associates now reached the considerable number of 4,800; besides pursuing the development of its work in Great Britain, it was making good progress in other parts of the Empire—in India, South Africa, Australia. An arrangement had been completed with the Government of the Bombay Presidency for the holding of examinations jointly with the Institute of Sanitary Surveyors. Examinations for sanitary officers under the auspices of the Institute had also been held in Hong-Kong, South Africa, and several States of the Australian Commonwealth. Branches had been established in Western Australia. Measures for preserving the health of armies in the field had engaged a great deal of their attention. The Institute decided some time ago to change its home. It was a bold scheme, but he claimed they had been completely successful. The settling down of the Parkes Museum in its new home was naturally a matter of considerable anxiety, but they regarded the Museum as one of the most valuable parts of the Institute. It was the aim to make the Museum and Library places of reference on scientific matters relating to health and hygiene. The exhibits were being revised and good progress was being made with the work. Referring to the Chairman of the Institute, the President said they were very fortunate in securing a chairman of so much experience as Mr. Boulnois, whose heart was so much at one with the objects they had in view; no doubt under his guidance the Institute would prosper as it had done in the past. In conclusion the President referred to the increasing respect in which the Institute is held.

Mr. H. Percy Boulnois, M.Inst.C.E.,

the Chairman of Council, in reply, said the Institute was about thirty-six years old, and it had done excellent work in the cause of sanitation. The Institute was unique, in that it contained members belonging to all professions, and, he was glad to know, women as well. The Institute was extending its usefulness all over the Empire, and he felt the full responsibility of being its Chairman. But the Chairman would be nowhere without the assistance of the Council, and he had a most loyal Council. And the Chairman was greatly helped by the officers, and Mr. White Wallis, their Secretary, who had made his work a life-long hobby, had got round him a loyal and able staff. He hoped that the Institute would continue to flourish during his year of office. There had been a good deal of criticism as to the Museum, but a sanitary museum was a difficult thing to run, and it was sure to be criticised. They wanted to make it popular and useful, and any hints they received they would be glad to consider.

Sir Aston Webb, R.A.,

proposed the toast of "The Visitors." Fifteen or twenty years ago, sanitary science in England was far ahead of any other country, but since then great advances had been made by Germany, France, America, and Japan, and they now ran us very closely.

Sir Thomas Barlow,

in reply, said they always connected the Institute with the name of Parkes, and the good work the Institute was doing was under the inspiration of that great and good man. They rejoiced in the work the Institute was doing, and had been doing for so many years, and they realised that it was sound and useful work.

The Chairman,
replying to the toast of his health, said that he was particularly grateful for their kind reception of the toast, because that was the first time he had met the members at one of their annual dinners since he was held up to the public as a fearful slum owner in connexion with a place called Walbottle. There were times of political excitement when any stick was good enough to beat a dog with, and he supposed Walbottle was as good as another. He did a very foolish thing. He took over some extremely bad houses for which he was not responsible. They belonged to a colliery company, and he imagined that if he took them over he could square the thing with the local authority better than the colliery company. But, unfortunately, as soon as he took them over the local authority insisted on his turning out the inhabitants of some twenty-five houses into the street at a moment's notice. He refused to do so, and he pointed out to the local authority that if they chose to turn them out they might, but that he would not turn the people out until the local authority or somebody else had provided houses for them. The local authority then exercised their powers. They took over the houses, and when they had got them, they found that they could not turn the people into the streets. The consequence was that they allowed them to remain, as he would have done, for a certain time until houses could be found for them.

THE SOCIETY OF ARCHITECTS:

HOSPITALS.

AT a meeting of the Society of Architects on the 11th inst. a paper on "Hospitals" was read by Mr. A. Saxon Snell, F.R.I.B.A., from which we take the following :—

"Modern hospital planning in this country dates from 1858, when the Blackburn and (a little later) the Herbert Hospitals were built. Then, for the first time, the pavilion system was adopted. Previously, the wards generally consisted of a number of rooms containing a limited number of beds generally ranged on each side of an enclosed corridor. With but one external wall, this necessarily entailed absence of through ventilation, a matter which we shall see is of vital importance. The administrative offices and sanitary conveniences were all in more or less direct communication with the wards; and the materials and methods of construction did not differ generally from that of ordinary buildings for the healthy. These are the main points which mark the difference between old and new hospitals.

I propose to give a general description of the buildings which go to form a modern hospital, and to deal in detail with the most important part, *i.e.*, the ward unit.

Site.

The ideal site has often been described at length, but may be shortly defined as being in the open country, but within convenient distance by rail or road of the town or area from which the patients will mostly be drawn. A light soil overlaying gravel or permeable chalk sloping gently towards the south-east, and protected by hills or rising ground or trees from the north, north-east, and north-west. A good water supply should also be available, and facilities for disposal of sewage.

For special hospitals which depend upon the services of the highest medical and surgical skill, much has to be sacrificed to bring them within reasonable distance of the specialist's consulting-room.

The disposition of the buildings depends, of course, largely upon the shape and area of the site, and the only general rules we can make are that the ward blocks should be so placed as to be free from the traffic of the other buildings, and the noise and dust of a public highway, should not be shadowed by other buildings, and should have uninterrupted light and air.

The public or road approach should be on the north side, from which easy access is obtained to the administrative offices, leaving the ward blocks freely exposed to the south, south-east, and south-west.

Out-Patients' Department.

Adjoining the lodge, I would place the out-patients' department, which should have separate entrances and exits into the road, and it should also be entirely disconnected from the other buildings. This is a point which is not always observed; indeed cannot be with some sites, especially in city hospitals.

Bearing in mind that dirt and disease are largely cause and effect, no patient is admitted to the wards of a hospital till he or she have been bathed and reclothed in perfectly clean garments. This cannot be insisted upon in the case of out-patients, and it is obvious that dirt and disease germs to a considerable extent must be deposited in that particular department; and it is therefore best isolated. The out-patients' department is too large to describe here in detail. It comprises a number of consulting-rooms, each devoted to certain classes of disease and surgery ranged round a large waiting hall.

The main point to be observed in the plan is that the hall should be sufficiently large, along a long parallelogram to allow of easy classification of the patients. In large institutions it is customary to have smaller waiting or preparation rooms intervening between the hall and each consulting-room, where patients can undress if necessary, and otherwise be prepared for examination by the surgeon or physician.

It is also important to provide separate exit doors for the consulting-room, and if it can be so arranged, patients should not return to the main hall, but go directly into the waiting-hall adjoining the dispensary. This is very difficult to manage unless the consulting-room is lighted from the roof. It is so arranged at Charing Cross Hospital.

Casualty Department.

Adjoining, and, indeed, forming part of the out-patients' department, is the casualty department, which, for identical reasons, should also be disconnected from the main building. For this department it is essential to have easy and quick access from the public road, and it should be possible to bring a cab or vehicle almost to the door of the operating-room, because fatal damage may be done to the injured person in removal. At Charing Cross Hospital you will see that the doors actually open on to the courtyard. Attached to the operating-room would be a waiting-hall for patients' friends, and a room or small ward for the injured after treatment.

Wards.

Beyond this block is a smaller one for the observation of cases suspected of infectious disease, or such as may develop in the hospital itself. This building should have no closed communication at all with other buildings.

In all hospitals a few rooms or a small isolated building is provided for fever cases which may arise among patients admitted to the hospital for other diseases. It is, of course, better that such cases should be at once removed to an infectious hospital, but it is not always practicable. The planning and fitting of this building falls under the head of fever hospitals, which is a subject for a separate paper.

I need only say here, that if one, however small, is attached to a general hospital, it should be absolutely isolated, with a zone at least 40 ft. wide all round. It should be complete with kitchen and nurses' quarters.

Medical School.

On the right of the lodge is placed the medical school, lecture-room, etc., and beyond these the pathological department, museum, mortuary, and engineering plant house, etc. The medical school should contain, besides a large lecture theatre, smaller lecture-rooms, museum library, students' studies. The students' recreation and reading room may be conveniently placed in the same building, though it is not altogether to be commended. They would be better placed in connexion with the living quarters or hostel if one is provided.

Mortuary.

Even in public mortuaries this is recognised, and you will find, for instance, that in Marylebone, bodies are placed in a building which is more or less a small chapel. For a hospital, it may be quite a small place if there is adjoining a large room or preferably a mortuary chapel. You may call it, or use it as, a "viewing-room." In practice, bodies are placed in the mortuary proper, which is severely and coldly practical in its construction and finishings, with its washable walls and floors, and ample ventilation.

When friends or relatives come to see their dead, the body is brought into the viewing-room or chapel, to spare them the gruesomeness of the mortuary. It has always seemed to me there should be a separate exit from the mortuary yard to the public road, as a hearse and funeral procession is not a cheerful sight for either the patients or staff. Attached to the mortuary, or in close proximity, is the post-mortem-room and pathological laboratory. Both rooms must be severely plain with washable and impervious walls and floors. The danger of blood-poisoning awaits the careless operator in these rooms. Pathological theatres are seldom used now. Instruction in pathology is given in the lecture-room, and practical demonstrations are held with small classes.

Operating-Room.

Every hospital must have an operating-room; and its area and arrangement differ according to whether the hospital has or has not a medical school attached to it. In the former case, all that is required is a fairly large room, preferably square, on plan, say, from 200 ft. to 250 ft. in area. Its adjuncts comprise a small sinkroom, anæsthetic-room, and sometimes what is clumsily called an after-recovery room, which is merely a small ward in which to place a patient immediately after an operation. Separate operating theatres are often provided, one to each surgical ward, partly to avoid carrying patients long distances and partly because distinguished surgeons differ so much in their ideas as to fittings, arrangements, etc. Otherwise, a more reasonable and economical plan is to place them all in one building with their adjuncts in common. A very good arrangement may be seen at the London Hospital.

Administrative Block.

Coming now to the main range of buildings, we should have in the centre an administrative block which should contain the offices, kitchen stores, etc., and beyond it to the south or even on the upper floors, the nurses' home may be placed. I say this with some reserve, as for many reasons the nurses' home is better separated entirely from the hospital proper; and, indeed, it is a more ideal arrangement to place this block in its own separate grounds and out of sight of the hospital. No one who has not undergone the hard life of a nurse, surrounded on all sides by pain and suffering for many more hours than the British workman thinks desirable for his own work, can realise the relief of different surroundings and atmosphere.

The administrative block contains all the rooms, offices, etc., used in the general administration of the hospital, commencing with the secretary's department, committee-room, medical officers' consulting-rooms, waiting-room for visitors, general kitchen, stores, matron's office, etc. Obviously, it is best placed in the centre of the establishment, and its planning is governed by an appreciation of the various uses of its several parts. It need only be said that the secretarial and office part should be well separated from the kitchen and stores department. It is general to make the main corridor the division between them.

Kitchen and Stores.

One large kitchen really suffices for a hospital. It is quite unnecessary to provide a separate one for the staff. In many hospitals a separate kitchen is provided for and placed in the nurses' home; but it is a more economical plan to have one kitchen only, and if the nurses' home is at a distance from the hospital, the nurses' dining-room may be placed in the main administrative block close to the kitchen. Except in the neighbourhood of large towns or cities it is well to have plenty of storage room, as it is cheaper to buy goods in large quantities. In large centres, however, weekly or even daily deliveries are easily arranged for. I need scarcely add that both kitchen and scullery should be well lighted and ventilated, and preferably by lantern lights. Also that the walls should be lined at least 6 ft. high with glazed bricks or tiles. Floors are best covered with hard vitrified tiles with close joints. It is also well to bear in mind that rounded corners and skirtings are as necessary in these rooms as in the wards.

Boiler House.

In any institution larger than a cottage hospital steam is essential for all kinds of purposes, from heating to sterilising; and a large and well-equipped boiler house is desirable. It is a great mistake for architects to overlook this important matter and to imagine that any small and out-of-the-way corner is good enough for the boilers and engineering plant. The department is best placed in a detached building, and so arranged that there shall be ample room, not only for the necessary boilers and plant, but also that these can be renewed or replaced at any time without the necessity of pulling down buildings or walls.

Plenty of boiler power is really economical. It is cheaper in the end to work a large boiler at low pressure, than a small one at high pressure. Steam may be required not only for heating and cooking, but also for laundry purposes and electric lighting, and many small matters.

Ward Blocks.

Right and left of the administrative block would be the ward blocks, each not more than two stories in height, and connected on the ground floor only by a broad corridor; although a connecting subway is useful, if it is not entirely necessary. There are differences of opinion upon that matter. The ward blocks should be so spaced that the distance between them is not less than one and a half to twice times the height of the blocks. This minimum distance is, I am afraid, not often attained even in some of the finest hospitals, especially those in urban centres.

Those responsible for the choice of sites have too often an indefinite idea as to the area required. In the case of King's College, I believe they were advised (not by an architect) that the area required was one acre to every fifty patients. That should be sufficient for ward blocks and administrative offices; but they did not add any additional ground for the large out-patients' department, medical school, etc., and I imagine the same thing happened at Manchester. Once again we have to acknowledge that they manage these things much better on the Continent. Ample space is seldom wanting in French or German hospitals.

We have noted that sunlight and air are the two most important factors in the cure of sickness and disease. These are best secured by adopting the pavilion form of ward, and placing the axis approximately north and south. The east, south, and west walls are thus all exposed more or less to its rays at some period of the day, and every bed place along the walls has the benefit of sunshine.

I do not know whether anyone has, as yet, dealt with the relative value of direct and diffused light in sickness, but definite information on the subject will some day have a material effect upon the planning of wards. One gathers that direct sun's rays are the more powerful agent; yet south light, which, owing to the altitude of the sun, penetrates a building to a much shorter distance than east or west, is commonly regarded as the most valuable. This is not always obvious in view of the fact that it is a common practice to build wards of exactly the same pattern on both sides of a central corridor, so that the end window in one case faces due north.

Coming now to the internal planning of the ward block or unit, I should remind you that the usual number of patients varies from twenty-four to thirty-two. The smaller number is more commonly adopted at the present day. The large number was reckoned as the maximum which could be efficiently looked after by a ward sister and her complement of nurses. As in every department of life our work nowadays is more complicated and makes greater demands upon those who serve, it has been found necessary to reduce this number to about twenty-four as a maximum.

Of this number, eighteen to twenty-two may be placed in the main ward, the remainder being distributed in small one and two bed wards adjoining.

The dimensions of the wards are necessarily determined by the area and cubic space required by the patients. Apart from fever hospitals, that varies according to the views of different authorities and circumstances. One thousand to 1,200 cubic ft. is, I think, the minimum that should be provided in a general hospital, although in the purer and fresher air of the country seven or eight hundred is really enough if more cannot be afforded. In the latest hospitals this amount is largely increased. In the new King's College Hospital as much as 1,580 ft. will be provided.

Taking 1,200 as the minimum, and the height of the wards as 12 ft., it would allow 100 sq. ft. of area per bed. Twenty-four feet used to be considered a sufficient width for wards, but 26 ft. is more general now. They are at times made even wider; but I think it is quite unnecessary. With a width of 26 ft., each bed would have a wall space of 7 ft. 6 in., which is quite sufficient for most purposes.

It is usual to keep the head of the bed at least 6 in. away from the wall, and this allows a width of 12 ft. in the centre for stoves, tables, etc.

Stoves with open fires should always be placed along the axis of the ward, one fire to each 700 ft. is enough, if hot-water pipes are provided in addition for really cold weather. The question as to central or descending flues is one mainly of appearance. One great advantage of central flues is that we are able to obtain good extraction flues for ventilation alongside the smoke flues.

There are several makes of stoves on the market suitable for wards, but they are not so often used as certain popular and widely-advertised forms, constructed mainly in iron and as unsuitable for the purpose as it is possible to be. The best stoves can be, and are, constructed entirely in brick or concrete, excepting only the grate.

Ward windows have been the subject of much controversy, and the most useful form is a combination of sliding sashes and ventilating hopper.

Great ingenuity has been expended in trying to obviate the obvious disadvantages this window possesses in the way of beads, internal angles, etc.; such, for instance, as making the sashes work in a groove, and building the frames flush with the internal surface. But none of them touch the real objection, *i.e.*, the hidden parts of the cased frame. This is very typical of so many so-called sanitary improvements in fittings; all the surfaces and parts open to view are improved and simplified, but those out of sight are ignored.

A short time ago a manufacturer brought me what he considered a new and improved form of inlet ventilator. He showed it to me with unconcealed self-satisfaction, and with an air of having brought me the thing for which I and others engaged in hospital work had been vainly seeking. He pointed out the plain enamelled surface of the front, devoid of mouldings and projecting hinges (when shut). I think he was grieved when I pointed out that the internal parts exhibited enough angles, wheels, and undesirable areas to harbour any amount of dust and dirt. I mention this, because it is so very typical of the principle that when the eye does not see, the heart need not worry.

Returning to the subject of windows, it cannot be disputed that some form of casement in solid frames is really the best from this point of view. My personal preference is for a modification of what is known as the Middlesex window, because it was first used at the Middlesex Hospital. At Charing Cross Hospital each window consists of a number of casements hung on centres and closing one upon the other. They are made in teak. At the Women's Hospital, Plaistow, they are made in steel; and this is undeniably the best material.

If I were to deal with all the details of construction of a hospital ward, there would be room in this paper for nothing else; and I must content myself with reminding you that the floors should be of solid fire-resisting construction and covered with a non-absorbent and, if possible, jointless material.

Almost as important as the plan is the section of the ward block. Always bearing in mind that the more sun and air we get in and around the ward the better, it is well, in the first place, that it should not be overshadowed by other buildings, and, in the second, that impediments to free circulation of air should be avoided.

Tollet, with a logical thoroughness which is truly French, placed his ward blocks on stilts, so that the air should have free passage under as well as around it. Recollect that the atmosphere is continually in motion, continually passing up and down, continually being purified and revivified in its motion. Check that motion, which is after all the essence of life, and it begins to stagnate. Tollet made the mistake, however, of raising his building too high, but only because the administration—forgetting the principle he had in view—found the space beneath the wards adaptable for enclosure as stores, etc. A height of from 4 ft. to 5 ft. only would prevent this; and still be sufficient to allow the free passage of air. Much less height would render the space difficult to keep clean.

The section of Tollet's wards is very striking. It is practically a Gothic arch; and the centre is no less than 26 ft. above the floor line. It provides an enormous volume of air in the ward; but, inasmuch as experiments have shown that there is little movement in air of a room at a greater height than 12 ft., it seems excessive. An elliptical section rising to a height of 14 ft. is effective; and I am told that the ward I built of that section at Charing Cross Hospital is the best ventilated of all of them, and the one in which it is easiest to maintain an even temperature at all times. Obviously it prevents a violent deflection of the air entering the wards at the upper parts of the windows and ventilating inlets, and eases the passage of air up to the extract flues in the roof.

Bath-Rooms and Lavatories.

The position of bath-rooms, lavatories, and conveniences varies in practice, but it is most usual to place what are quaintly called sanitary towers at the extreme end of the wards jutting out at the corners. I do not think it an ideal position, because, for one thing, it is just at those points that we are able to get the most and best sunlight, which these towers necessarily block out. These towers are separated by cross-ventilated lobbies from the ward.

Mr. Aldwinckle, at the Brook Hospital, placed these offices in a tower leading out of the centre of the ward, and this plan has its advantages from some points of view; but, on the whole, it seems that a better position (especially in a short ward) is at the lower end of the ward adjoining the ward kitchens, etc. This leaves almost the outer wall surface and windows of the ward itself exposed to the sun without interruption.

It is most usual to place the baths in one of the towers, but this is, I venture to think, entirely unnecessary from a sanitary point of view, and they are more conveniently placed adjoining the kitchen and offices. In this way it is possible to make the towers of small dimensions—a matter of great importance, in view of the obstruction they form to the light and air of other parts. For this reason, too, and another, it is better to put the ward conveniences in one tower and the nurses' sink-room in another. The other reason is that the nurses' work (at best, not the most pleasant) is rendered easier and more agreeable. The special convenience for the use of nurses may also be well placed in the sink-room tower. It should contain separate sinks respectively for emptying and cleaning bed pans without unnecessary handling; and also a long, wide, and shallow sink for washing mackintoshes. Also a small cupboard for preserving specimens of excreta for examination. This can be well placed in the thickness of the outer wall, and it should be thoroughly ventilated.

The air which is extracted from the ward by open fires and flues must be replenished from the outside; and it will be drawn more freely through the openings which offer the least resistance to its passage. That may easily happen to be through the sanitary annexes; and it is, of course, the function of the cross-ventilated lobby between the annexe and the ward to obviate this. Care must be taken that this lobby is not a mere flue between them, and that can only be done by making the passage of air in the lobbies easier than in the annexe. It is possible to make the extracting power of the annexe stronger than that in the wards, so that the draught is away from, rather than towards, the wards.

Although I do not propose to deal at any length with the question of ventilation, I must state the general principles as applied to wards, because it has a bearing on the particular form of the pavilion block.

In the first place, I think, it is not unknown that I abjure all forms of mechanical ventila-

tion in hospital wards, and it is with no little satisfaction that I find that medical men, as a rule, are emphatic in their preference, for what we call natural ventilation. Ample and efficient ventilation can be secured in this country by means of open windows and air-inlets.

In the treatment of consumption it has been found that unlimited fresh air is one of the most important factors; and it is now recognised that it is equally valuable for every other disease. I think it is not too much to say that even the doubtful freshness and cleanliness of the air in cities is better in excess rather than in small quantities. In other words, have plenty of air in the wards—clean and fresh if you can—but if you cannot, at any rate have as much as you can of the best available supply. I am not suggesting that air is not best when cleansed of all dust and dirt, but until we can secure this by more simple means than machinery and long, dark flues, we are better off as we are.

In most mechanical schemes the engineer cannot resist the opportunity of combining the heating with ventilation, *i.e.*, by delivering the air into the wards warmed. Those who can enjoy and thrive in warm air love also sterilised water and other lifeless things. The majority of us prefer and thrive better on air and water as nature supplies them.

In placing the windows directly opposite one another, we can at most times get a gentle flow of air from one side to the other. This is the case even on the stillest day, because the temperature on any one side of a building is always greater or less than on the others, and, as we know, movement of air is caused entirely by the differences in temperature.

In rough or cold weather we have to rely more or less on the inlet flues, which are placed—one to each bed—in the outer walls. They discharge into the ward about 3 ft. to 4 ft. below the ceiling level. A little air may also be introduced at the floor level, the inlets being so placed that it infringes on, and is slightly warmed by the radiators or hot-water pipes. This helps the general circulation of the air. An inlet or inlets may also be placed with advantage in connexion with the central heating stoves.

Very important is the provision for extracting the foul air which is given off by the patients. The most powerful agent in this direction is the open stove, but strong extraction flues at the ceiling level are of equal importance, and an induced current is valuable.

The golden rule is to have plenty of air, fresh and cold, but not too cold for reasonable comfort, and to keep it gently moving.

Staircase and Lift.

If the ward block is of more than one story, a staircase and lift is, of course, necessary. The stairs should not be less than 4½ ft. in width and with an easy rise, say 6½ in. with an 11-in. tread. No winders should be allowed. The lift should be large enough to hold a bed and two nurses or attendants. It is desirable that the staircase should be cut off by a corridor or cross-ventilated lobby from the wards and adjuncts, so that the air from the lower ward may not be able to ascend to the one above."

THE INSTITUTE OF SANITARY ENGINEERS:

ILLUMINATING ENGINEERING.

At a recent meeting of the Institute of Sanitary Engineers, Mr. Leon Gaster read a paper on "The Hygienic Aspects of Illumination and Recent Progress in Illuminating Engineering," from which we take the following paragraphs:—

"Perhaps few of those whose daily work does not bear on lamps and lighting realise how very rapid the recent progress has been.

In electric lighting the chief advance has been in the direction of metallic filament glow-lamps. In the year 1905 lamps of this kind were known, but were regarded as little more than experimental curiosities. Subsequently, when I exhibited a 200-volt lamp of this kind at the Institution of Electrical Engineers early in 1906, there were still many who doubted whether it would be possible to make such lamps for higher voltages than 100. Yet, as you know, such lamps are in common use to-day, and the difficulties of making durable lamps of small intensity has been largely got over. We have now lamps consuming only 1·1-1·2 watts per c.p., which will burn, under favourable conditions, for over 1,000 hours without sensible diminution of light, can be used in any position, and are far less liable to fracture than those in use only two years ago. Moreover, it is now possible to obtain 100-volt lamps consuming only 17 watts, and 200-volt lamps consuming only 30. A recent important step has been the discovery that metallic tungsten can be produced as a malleable wire and wound on a frame inside the bulb, thus leading to improved durability and strength.

At the same time progress in connection with arc lamps has also been very rapid. Lamps credited with a light of several thousand candle-power and a specific consumption of less than one-third of a watt per c.p. (quite three times as efficient as the older forms of lamps) are now available. This improvement has been secured mainly by the use of special chemically-prepared carbons, and there have also been advances in the design of enclosing globes, reducing the consumption of carbons and expense of maintenance.

The use of luminescent vapours in artificial lighting has also recently received special attention. Steady progress in mercury vapour lamps has been made. A special development has been the introduction of a new lamp using a quartz tube to contain the mercury vapour. These lamps are stated to yield as much as 3,000 c.p., and to consume less than 0·2 watts per c.p., and the life of the tube is put at over 1,000 hours. The lamp has also the special quality of emitting an exceptional amount of non-luminous, ultra-violet energy.

Among other developments in vapour lighting I may mention the progress in the Moore system, in which a ramifying tube, often 60 or more feet long and containing rarefied gases, is subjected to a high tension discharge at 2,000 volts. The quality of the light depends largely on the nature of the gas used; with nitrogen a pinkish colour is said to be obtained, with carbon dioxide an almost white colour, closely approaching daylight. Quite recently a very distinct red tint is reported to have been secured by the use of the rare gas, neon.

It need hardly be said that there have also been great improvements in gas lighting. Modern inverted high-pressure gas lamps, run at a pressure of 50 in. of water or more, are claimed to yield as much as 50 to 60 c.p. per cubic foot of gas, which is three times as high an efficiency as was considered possible with the best low-pressure burners a few years ago. The spread of high-pressure gas lighting has attracted much attention. But the steady improvement in low-pressure burners, especially by the aid of the inverted mantle, has been equally remarkable. The latest pattern of low-pressure street lamp is stated to give as much as 30 c.p. per cubic foot of gas per hour.

Equally important have been the developments in methods of controlling gas supply, the introduction of automatic means of lighting and extinguishing streets lamps, etc., on which, however, I cannot dilate at present. The durability in mantles, like that of electric lamp filaments, has been much improved, and this has been the means of enabling gas lighting to be applied to many purposes for which it might not have been considered suitable only a few years ago.

Next, we must not forget the rapid advance of methods of artificial lighting, such as acetylene, petrol air-gas, and incandescent paraffin, which are suitable mainly for remote districts where a gas or electric supply is not available. The progress in methods of illumination in country districts has been, in its way, quite as remarkable as that in gas and electricity.

Moreover, attention should be drawn to the extraordinary development in new uses for light which this improvement in lamps has brought about. It is possible that the use of light for special decorative and advertising purposes is only in its infancy, and it is unquestionable that a great deal more care is now being taken to apply light in a wise and careful manner for ordinary every-day purposes. One indication of this change of view has been the attention now devoted to the scientific design of globes and reflectors intended to throw the light where it is needed for specific purposes. It is now realised that the mere production of light in large quantities does not constitute "illuminating engineering," and that it is necessary to make good use of the light we have now learned to produce in such abundance. Epigrammatically expressed, "Light is the cause, illumination the effect."

The author then dealt with features in artificial lighting to be guarded against (glare, insufficiency, etc.); indirect lighting and local illumination; the effects of light of different colours; invisible radiation—ultra-violet light; and ventilation and artificial lights, etc.

As to the value of measurements of illumination, the author said:—

"Before passing on to my concluding remarks, I should like to lay special stress on the value of actual measurements of illumination. Considerable progress has recently been made in the direction of producing simple and reliable instruments for this work, and I have here an apparatus which was recently used in a series of investigations of lighting conditions in schools and libraries in London recently undertaken by myself in conjunction with Mr. J. S. Dow, and presented before the Illuminating Engineering Society. I mention this merely to show that such measurements can now be made with comparative ease and security, and that they may be of considerable service in preserving a record of daylight and artificial conditions. One of the points brought out by these investigations, for example, was the great difference in the distribution of daylight and artificial light in the average interior. In some cases the daylight illumination at different parts of a room varies to a far greater extent than does artificial illumination; in some cases examined the range was as high as thirty to one.

Reference has already been made to the enormous variations in daylight that may occur from day to day, or even from minute to minute. But until we have adequate actual records of measurement of such conditions, the scientific treatment of daylight illumination of interiors is very difficult. It is only when such records are prepared that we gain an indication of the right course to be pursued. The discussion on school lighting which I have just mentioned, for example, led some of the surveyors and medical officers of health present to lay stress on the importance of designing narrow classrooms in which the distance from windows to the back of the room is not too great.

If this depth exceeds a certain value, the old rule that the window area should not be less than one-fifth of the floor area does not lead to satisfactory results; on this account Engelbracht, in Hanover, has suggested as preferable the formula

$$f = \frac{F \cdot t^2}{5 \cdot 56},$$ where f = window area in square metres.
F = floor.
t = depth of classroom in metres.

However, even at present, it is probable that, with a proper study of the record of daylight conditions available, one could foretell the average intensity of illumination at different parts of the year, given plans of an interior and the knowledge where it is to be erected. If more trouble were taken in this respect beforehand, it is possible that the number of failures, as regards daylight illumination in interiors, might be considerably reduced.

One particular matter, special instance of the value of precise tests of illumination, is afforded by ancient light cases. At present the difficulty of deciding whether an applicant has a *bonâ fide* claim that his illumination is materially affected is very considerable; it is safe to say that in many such cases the photometric measurement of illumination would be a very valuable weapon, and I understand that Mr. P. J. Waldram has recently found his modification of the Trotter photometre very serviceable in this connexion.

As regards artificial illumination, it is equally clear that in order to prescribe what is the proper amount of illumination for different purposes, one must have available some means of measuring the illumination provided. For example, in suggesting the desirability of having at least 3-ft. candles as a reading illumination in schools and libraries, the Illuminating Engineering Society was assisted by having at their command a record of measurements in such interiors showing

that this standard could actually be attained. In the same way, were it attempted to put forward tentative suggestions regarding the amount of illumination required for different trades and industries, actual measurements would be essential as a means of checking the results obtained.

In passing, one may trace an interesting analogy between the study of ventilation and conditions of air in rooms and illumination. In the case of ventilation and air-supply it was only when precise and simple methods of testing were devised that the importance of the matter could be brought home to the general public; in the same way, when one can demonstrate that illumination is a measurable quantity, one has gone far towards impressing the public with the desirability of scientific treatment."

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday at the County Hall, Spring-gardens, S.W. Mr. Edward White (Chairman) presided.

LOANS.—The Finance Committee recommended that a loan of 5,500*l.* be made to the Hampstead Borough Council as a contribution towards the cost of acquisition by the Council of "The Grange," Kilburn, for the purpose of an open space. This was agreed to.

The same Committee also recommended and it was agreed that a loan of 1,276*l.* be made to the Camberwell Borough Council for part cost of acquiring and laying out an open space.

SCHOOL, BATTERSEA.—The Education Committee reported that it was proposed to rebuild the Mantua-street School, with an accommodation of 1,152 children, which, with the existing school, will provide a total accommodation of 1,524.

SCHOOL, POPLAR.—The same Committee also reported that it was proposed to demolish the existing building and erect on the site in Ricardo-street, a new school, and it was desirable to purchase additional property for that purpose.

HANDICRAFT CENTRE, LIMEHOUSE. — Another recommendation put forward by the same Committee was that a new handicraft centre for boys should be erected in Heckford-street, and the tender of Messrs. Gathercole Bros., amounting to 654*l.*, be accepted. This was agreed to.

NEW SCHOOL LONDON.—The Committee also reported that tenders would be received for the erection of new premises for the London County Council School of Photo-Engraving and Lithography.

STAIRCASE, CAMBERWELL.—It was also recommended by the Committee that the staircase be extended at the Ilderton-road School, Camberwell. This was agreed to.

SHAKESPEARE NATIONAL THEATRE.—The General Purposes Committee recommended and it was agreed that an option, terminable in April 1912, should be granted to the Shakespeare Memorial Committee to purchase, on terms to be afterwards agreed, the site of the County Hall in Spring-gardens on its vacation by the Council.

LIGHTING, ABBEY MILLS.—The Main Drainage Committee recommended that in connexion with the enlargement of the Abbey Mills pumping station, it was necessary to arrange for the installation of electric light. It was agreed that the laying of electric mains for this purpose should be carried out by the West Ham Corporation.

CHELSEA SKATING RINK.—The Theatres and Music Halls Committee recommended and it was agreed that no objection should be offered to the proposal to convert the Chelsea Skating Rink into a cinematograph hall providing accommodation for about 1,300.

NEW COUNTY HALL.—The Establishment Committee recommended and it was agreed that tenders should be obtained for the construction of the substructure of the new County Hall.

FIRE STATIONS.—The Fire Brigade Committee recommended and it was agreed that drainage and sanitary work should be carried out at the Manchester-square Station, and also the necessary repairs at the chief station. The work in both cases to be carried out by the Westminster Construction Company, Limited.

SUBWAYS.—The Highways Committee recommended that the ironwork in the subways should be painted, and the work carried out by the Council's engineering jobbing contractors. This was agreed to.

METROPOLITAN ASYLUMS BOARD.

AT the fortnightly sitting of the Metropolitan Asylums Board on Saturday the following matters were dealt with: —

Leavesden Asylum.—It was decided to deal with the stone staircases in ten of the patients' blocks at this asylum by the fixing of steel stair-treads.

Park Hospital.—On the recommendation of the Children's Committee it was decided to fix galvanised wire guards to the archways under the wards of the above hospital at an estimated cost of 400*l.*

White Oak School.—The tender of Mr. L. Kazak, of Belvedere, amounting to 1,320*l.* 10s., was accepted for the cleaning, painting, and repair works required at White Oak School.

The Chief Engineer.—Owing to illness, Mr. W. T. Hatch, the Chief Engineer, was granted leave of absence for three months, and Mr. T. Cooper, First Assistant-Engineer, was appointed to act in his absence.

North-Western Hospital.—Mr. T. W. Aldwinckle was appointed as architect in connexion with the provision of additional isolation accommodation at this hospital at a commission at the rate of 5 per cent. on the total cost of the works.

METROPOLITAN WATER BOARD.

AT the usual sitting of the Metropolitan Water Board on May 19 the following amongst other matters were dealt with: —

Supply to the Hampstead Garden Suburb.—The Works Committee stated that they had considered a report from the Chief Engineer with reference to the improvement of the supply to the "Kidderpore" reservoir zone of the Board's area. The recently-established Hampstead Garden Suburb is within this zone, as also are other large tracts of land which three years ago were merely agricultural, but, consequent upon the opening up of railway facilities at Golder's Green, are now covered with high-class buildings. Hendon, also, is growing rapidly, and the Chief Engineer states that the present means of supply require supplementing at the earliest possible moment, to enable an adequate supply of water to be given to these localities.—It was decided to ask for sanction from the Local Government Board to spend 42,175*l.* on improving the supply, which will include the provision of a new pumping-station.

Houses at Walton.—It was decided to accept the tender of Messrs. Dick Kerr, Ltd., of 1,000*l.*, for the erection of foreman's house and watchman's lodge at the Walton pumping-station.

LAW REPORTS.

CHANCERY DIVISION.
(Before Mr. Justice PARKER.)

West-End Nuisance Case.

Ffoulkes *v.* Salisbury-Jones and Vare Bros.

THE hearing was concluded of this case last week, it being an action for an injunction and damages brought by Mrs. Maude Mary Chester Ffoulkes, an authoress, of Berkeley Cottage, 2, Jones-street, W., against Mrs. Mina Salisbury-Jones, of 27, Berkeley-square, and Vare Bros., builders.

It appeared that the plaintiff was the tenant of Berkeley Cottage for a term of years, and the defendant, Mrs. Salisbury-Jones, was the owner of No. 27, Berkeley-square, which backed upon the plaintiff's house, and being separated from it by a party wall. In August and September last the back portion of No. 27, Berkeley-square was pulled down for the purpose of allowing certain building extensions, the second defendants being the builders for the purpose of doing the work. Plaintiff complained, first, that the defendants had not complied with the requirements of the London Building Act, and had not given her the proper notice, and, secondly, that the operations had been conducted in such a negligent manner as to become a nuisance to the plaintiff by dust and broken materials, and that she had been put to considerable expense and inconvenience, and that her work as an authoress and journalist had been interfered with by the defendants' building operations. The defence was a general denial.

Mr. Romer, K.C., and Mr. Beddall appeared for the plaintiff; Mr. Grant, K.C., and Mr. Stamp for Mrs. Salisbury-Jones; and Mr. Hamilton, K.C., and Mr. Ford for the builders.

Mr. Romer explained that in August last the back portion of 27, Berkeley-square, which was only separated from Berkeley Cottage by a party wall, was being rebuilt, and the complaint made was that this was done so negligently as to cause great inconvenience to Mrs. Ffoulkes, and to render her house uninhabitable. She was compelled to reside in a hotel, and this interfered greatly with her literary work and the production of a book of reminiscences which was due for publication last November. The house was smothered with dust from No. 27, and small pieces of brick came down all the chimneys. Old timber was thrown down from a stage at the top of the hoarding, and filled the area and kitchen with debris, rendering the food in the larder unfit to eat. The carpets had to be sent away to be cleaned, and the premises had to be repainted and varnished. She claimed special damages in respect of this, and the extra cost of living, payment of a caretaker, and other extra expenses incurred.

Mrs. Ffoulkes, giving evidence, said that moving into a hotel was a great inconvenience to her, as it interfered with her literary work. She was at that time engaged upon a book of reminiscences, and had received certain letters from very important people for that purpose. She did not like having to take these valuable papers away from her house.

The caretaker was called, and stated that she was unable to keep Berkeley Cottage clean because of the dust that came in. So much of it came down the kitchen chimney that she had to put the fire out.

Joseph Wallace, who did some painting at Berkeley Cottage, declared that the fresh paint and varnish were completely spoilt by the dust.

After hearing the evidence called on behalf of the defendants, his lordship held that the defendants' small non-compliance with the requirements of the London Building Act, 1894, was not a sufficient ground by itself for giving damages, but he held that the defendants had been guilty of negligence in the way they had conducted the building operations, and that they had shown a want of exercise of skill and care, and that the legal duty in the circumstances imposed on the defendants had not been discharged. Upon that head, therefore, he awarded the plaintiff 40*l.* damages, and said the costs must follow the event.

MANCHESTER COUNTY COURT.

Architect's Plans and Fees.

IN the Manchester County Court on the 18th inst. Mr. Percy Churchill Larmuth, architect and surveyor, of Cross-street, sued Mr. Richard Lomas, builder, of Beresford-road, Longsight, for 10*l.* 10s. as fees for work done.

Mr. Yates, for the plaintiff, said that besides being an architect and surveyor the plaintiff was agent of a building estate for sale in Burnage-lane. Early in February of last year the defendant approached him and negotiated for the purchase of a plot of the land on which he intended to erect three shops. Subsequently, after agreeing to purchase the land, the defendant instructed the plaintiff to prepare plans for the erection of the shops. The plaintiff completed them and presented them to the Corporation for approval. The Corporation returned them for the signature of the defendant, which was attached. Six weeks later the Corporation intimated that they could not pass the plans, as they intended to widen the street and set back the building line by 5 yds. The defendant thereupon said that this made it impracticable for him to erect the shops, and refused to pay the plaintiff for his work. Counsel contended that as the work had been done before the Corporation intimated their intention to widen the road, plaintiff was entitled to his fees, especially as the defendant had personally approved of the plans and signed them.

The plaintiff said that when the plans were prepared they had no idea the Corporation intended to widen the road.

In reply to Judge Mellor, K.C., Mr. Green stated that the sale of the property was only in negotiation.

The Judge: If there had been a settled contract the defendant could have got compensation from the local authority as an aggrieved person, but I see he cannot now.

The plaintiff, in cross-examination, admitted that it was the business of an architect to prepare such plans as would comply with the requirements of the local authority, but pointed out that no one could foresee that an authority would suddenly make up its mind to widen a road. The plans were still useful, because, except with respect to the set-back, they met with all the requirements of the Corporation.

Asked whether it was not the duty of an architect to inquire about all such matters before drawing plans, the plaintiff said that only three or four months earlier he had built

some property adjoining, and on the same side of the road, in connexion with which the old building line was approved. The defendant could easily have got more land and still built the shops. He agreed, however, that such a set-back would be a detriment to business in view of the other property being at the old line. At the same time, the defendant could have got more money for the land from the Corporation than he paid for it.

The judge said he should think that the business of the architect was to fulfil such requirements of the local authority as those relating to drainage, water supply, size of rooms, air space, and so on, and that if he fulfilled all such requirements as were in existence at the time he drew the plans he had performed his contract. Really neither the plaintiff nor the defendant had done wrong in this case. It was rather a case of two innocent parties—which should suffer?

Mr. Green, for the defendant, argued that the building line was one of the most important points an architect had to comply with, and that it was the architect's duty to ascertain definitely what that line was before proceeding to draw plans. If he drew them before making sure, he did so at his own risk. Although the Corporation might not have known definitely where the new building line would be when the plans were first presented, an alteration was evidently determined upon, and the architect should have delayed his work. If he had inquired immediately before preparing the plans he would have discovered that there was to be a change.

Subsequently, the judge accepted Mr. Green's view, that when an architect did not definitely ascertain the building line immediately before preparing plans he prepared them at his own risk. In this case, he said, the plaintiff should have made inquiries, and should then have waited until the Corporation made up their mind where the line was to be. He found that it was the architect's duty to satisfy the requirements of the local authority, and that until he did that he had not performed his part of the contract. He came to this decision with some hesitation.

Mr. Yates: May I call another architect as to the custom of the trade?

The Judge: It is not a question of custom of the trade. It is one of public health. I must give judgment for the defendant here, but each party will pay his own costs.—*Manchester Guardian.*

TRADE CATALOGUES.

The Leeds Fireclay Company, Ltd., have just issued an album illustrating a number of buildings recently erected in their Burmantoft's "Marmo," vitreous and plain terra-cotta, and faience. The book is excellently produced, and is interesting as showing the varied uses to which terra-cotta is put nowaday. The introduction to the album is a *résumé* of the possibilities and advantages of various types of Burmantoft's terra-cotta. In addition to the works illustrated, the whole of the elevation of the new buildings for the Armourers' Company in Copthall-court and Drapers'-gardens is in course of execution in Burmantoft's white "Marmo," Mr. Alexander Graham being the architect. The new premises in Fleet-street for Messrs. J. Lyons & Co. are also executed in Burmantoft's "Marmo," Messrs. Brown & Barrow being the architects.

LONDON COUNCILS.

Berkhampstead.—Plans have been passed for the Rev. R. H. Cattell for a vicarage at Sunnyside.

Brentford.—Plans have been passed for Messrs. Dorey & Co. for a cinematograph theatre at High-street.

Croydon.—The Surveyor to the Rural District Council has been directed to prepare plans and estimates for the making-up of ten roads in the parishes of Beddington, Mitcham, Sanderstead, and Wallington. The following plans have been passed:—Mr. H. A. Rayner, five shops, etc., Brighton-road; Surrey Education Committee, boys' school, Commonside East; Mr. Isaac Wilson, six tenements and seventeen houses, Church-road, sixty-five houses, Hawthorne-avenue, sixty-one houses, Ashtree-avenue, one house, Lewis-road, and three houses, Oakwood-avenue; Selected Estates Company, ten houses, Seely-road; Mr. J. L. Newberg, six houses, Fortescue-road.

Deptford.—Plans have been lodged by Messrs. Lole & Co. for warehouses on the site formerly occupied by Hills' Chemical Works, Creek-street.

East Ham.—Plans have been passed for Mr. F. E. Chillingworth for eight houses in Brampton-road.

Finchley.—The following plans have been passed:—Messrs. Lavington Bros, five houses, Fenstanton-avenue; Mr. C. F. Day, three houses, Churchfield-avenue; Mr. J. Allen, eight houses, Cornwall-avenue; Mr. J. C. Williamson, six houses, Clarence-gardens; Messrs. E. & W. Bennett, two laundries, Ballards-lane. A plan has been lodged by Messrs. Farebrother for sixteen houses, Windermere-avenue.

Greenwich.—Portion of Ransom-road is to be made up and paved as a new street at an estimated cost of 619*l.* Application is to be made to the L.C.C. for sanction for a loan of 900*l.*, the estimated cost of altering the levels and extending into Deptford Creek the frontage of the Norman Wharf Depôt, and for the erection of a boundary wall. A portion of Straightsmouth is to be formed and paved as a new street by Messrs. H. Woodham & Sons, Sangley-road, Catford, S.E., at a cost of 247*l.* The same firm are also to pave, at a cost of 200*l.*, the portion of roadway and footway running parallel with the above portion of Straightsmouth. Plans have been passed for Mr. Norman Drake for four houses, Vanbrugh Fields, also for Mr. Alfred Roberts to build works for Messrs. G. Harvey & Co. in Woolwich-road.

Islington.—Repairs are to be carried out to the carriageways of three roads at an estimated cost of 548*l.* Portion of the sewer in Cleveland-road is to be repaired at an estimated cost of 140*l.*

Kensington.—The following tenders have been accepted:—Improved Wood Pavement Company, Ltd., renewal of wood paving in Redcliffe-gardens, 6s. 8½d. per super. yard; portions of Notting Hill Gate, 7s. 4½d. per super. yard; Pembridge-villas, 6s. 9½d. per super. yard; Messrs. Wm. Griffiths & Co., Ltd., paving Drayton-gardens with wood, 10s. 3d. per yard super.; Improved Wood Pavement Company, Ltd., paving Penzance-place with wood, 9s. 2d. per super. yard; Messrs. Abbott & Charlton, extensions to convenience, Avondale Park, and provision of shelter, 114*l.*

Lambeth.—One hundred and fifty-five feet of the 15-in. pipe sewer in Dante-road is to be relaid at an estimated cost of 125*l.* The tender of Messrs. Adamsez, Ltd., Fireclay Works, Scotswood-on-Tyne, at 1,899*l.*, has been accepted for the construction of a convenience at Westow-hill. Plans have been passed for Mr. Leonard Staines, on behalf of Dr. Gandy, for a motor garage at the rear of No. 2, Central-hill.

Lewisham.—Tenders are to be invited for paving and forming Riseldine-street. Messrs. Fry Bros. are to kerb, channel, and make up the roadway of Redruth-road at 615*l.*, and Mr. W. Pearce is to pave the footways at 4s. per yard super. The following plans have been passed:—Mr James Watt, thirty-nine houses, Bellingham and Arran roads; Mr. E. H. Wright, building on site of Nos. 50-52, Rushey-green; Mr. William Allam, six houses, Manwood-road; Mr. J. Laird, jun., three houses, Nightingale-grove; Messrs. S. J. Jerrard & Sons, six houses, Shell-road; Messrs. Gathercole Bros., addition to Horniman's Museum, London-road, Forest Hill.

Paddington.—Guardians have instructed their Architect (Mr. E. Howley Sim) to prepare a sketch plan, together with the approximate cost, for making an addition to the dining-hall at the workhouse to accommodate 300 women.

Tottenham.—The following plans have been passed:—Mr. P. Roche, 110, High-road, South Tottenham, eight houses, Moundfield-road; Mr. W. E. Riley, Superintending Architect, L.C.C., Spring-gardens, S.W., forty-eight houses, Risley-avenue; Rev. A. B. C. Robinson, iron church, Vale-road. Plans have been lodged by Mr. T. Rowley for 101 houses, South Grove Estate; also by Mr. Couchman, architect, for a hall, etc., in connexion with St. Mary's Sunday-school, Mitchley-road.

FOREIGN AND COLONIAL.

Public Buildings, Constantza, Roumania.

The communal authorities of Constantza have also been authorised to contract a loan for 3,000,000 lei (120,000*l.*) to be utilised in connexion with the erection of public buildings, barracks, schools, and slaughterhouses, the construction of baths, paving operations, canal extensions, etc.

Hospital, Budapest, Austria-Hungary.

The *Oesterreichischer Zentral-Anzeiger* (Vienna) of May 11 states that the "Hauptstädtische Finanz-Kommission," Budapest, have decided to acquire a piece of land adjoining the Vácer Strasse for the purpose of erecting a hospital with accommodation for 800 beds.

City Slaughterhouse, Madrid.

The *Gaceta de Madrid* of May 11 notifies that the municipal authorities of Mataró invite tenders for the construction of a city slaughterhouse. The upset price is put at 282,951 pesetas (about 10,500*l.*). A deposit of 5 per cent. of the amount named will be required to qualify a tender. Tenders will be opened on June 12; they should be addressed, "al Señor Alcalde, Alcaldía Constitucional, Mataró."

Public Improvements, Brazil.

According to an article in the *Messager de São Paulo* of April 14, the City of São Paulo will soon undergo a complete transformation. By the co-operation of the city authorities and the Government of the State of São Paulo, schemes are to be considered for the construction of new streets and avenues, and the erection of imposing buildings, which will necessitate the expenditure of a large sum of money.

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

PATENTS.

APPLICATIONS PUBLISHED.*

6,484 of 1910.—Louis Joseph Jean-Baptiste Cheneau and Albert Prevost: Strengthened or reinforced material.

8,990 of 1910.—Richard Henry Annison: Members for iron or other metal constructional work.

9,520 of 1910.—Anderson MacPhee: Apparatus for heating or cooling and ventilating ships, buildings, and the like.

9,521 of 1910.—Anderson MacPhee: Apparatus for heating or cooling and ventilating ships, buildings, and the like.

10,548 of 1910.—Thomas William Twyford: Brackets or supports for lavatory basins and analogous articles.

11,064 of 1910.—Frederick Orbell: Wrench.

11,427 of 1910.—Francis Conrad Britting: Reversible window-shade carriers.

18,614 of 1910.—Bartholomaus Jäckle: Securing device for venetian blinds.

18,686 of 1910.—Benjamen Kotkovski: Locks.

20,739 of 1910.—William Bernard Knapp: Window-curtain, screen, and the like.

22,618 of 1910.—Edward Mohun: Metal reinforced concrete piles.

23,115 of 1910.—Harry Allan Peters: Strainer for sink outlet.

30,219 of 1910.—Edward Charles Robert Marks (Baumaterialien Aufzugsges): Builders' hoists.

7,304 of 1911.—Emile Bernard Wesbecher: Method of and means for rigidly connecting metal pieces.

10,038 of 1910.—Walter William Smith: Water-closets and the junction and branch pipes thereof.

10,471 of 1910.—Johannes Roth: Automatic brick or tile cutter.

10,527 of 1910.—Fletcher, Russell, & Co., Ltd., and Thomas William Fletcher: Hot-water apparatus for baths, lavatories, and household purposes.

13,817 of 1910.—Gottfried Herbst and Juan Ziegler: Method of constructing heat-insulating walls from peat.

17,398 of 1910.—Percy John Thomas: Locks for doors, gates, and the like.

18,338 of 1910.—John Gustaf Adolf Rhodin: Manufacture of white hydraulic cement.

19,443 of 1910.—Johann Koenig: Pipe joints.

19,511 of 1910.—John Kelly: Artificial flagstones or slabs for use in constructing railway or station platforms and the like.

PATENTS—*Continued on page 665.*

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointment, xx.; Auction Sales, xxvi.

Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

JUNE 1.—**Bradford.**—INFIRMARY.—The Board of Management of the Bradford Royal Infirmary invite competitive plans, with estimates, for the erection of a new infirmary on a site in Duckworth-lane. See advertisement in issue of December 31 for further particulars.

JUNE 2. — **Norwich.**—HOUSES AND BUILDINGS.—The Royal Agricultural Society of England invite designs for plans of houses and buildings for small holdings. Three premiums are offered. See advertisement in issue of May 5 for further particulars.

JUNE 7. — **Monkseaton.** — DESIGN FOR CEMETERY BUILDINGS.—The Whitley and Monkseaton U.D.C. invite designs for proposed cemetery buildings from architects practising in the county of Northumberland and the City of Newcastle-on-Tyne. See advertisement in issue of May 5 for further particulars.

JUNE 10.—**Aspatria, Cumberland.**—SEWERAGE.—The U.D.C. invite engineers to submit plans for estimates of a scheme of sewerage. The surveyor will give particulars required.

JUNE 15. — **Lowestoft.** — SCHOOL. — The Lowestoft Education Committee invite designs for an elementary school. Premiums offered, 21*l*., 10*l*. 10s., and 5*l*. 5s. See advertisement in issue of February 10 for further particulars.

JULY 1.—**Swansea.**—CHAPEL, SCHOOLROOM, ETC.—Designs are invited for chapel, schoolroom, and classrooms at Swansea. See advertisement in issue of May 19 for further particulars.

JULY 31. — **Wellington.** — NEW PARLIAMENT BUILDINGS.—Premiums of 1,000*l*., 500*l*., 300*l*., and 200*l*. are offered for the competitive designs. Particulars from the Minister of Public Works, Wellington, New Zealand.

AUGUST 15.—**Berne.**—MONUMENT.—Designs for the erection of a monument at Berne to celebrate the foundation of the International Telegraph Union. Conditions may be seen in the library of the Royal Institute of British Architects.

SEPTEMBER 12-25.—**Athens.**—COURT OF JUSTICE.—An international competition is instituted by the Ministry of the Interior, for the erection of Court buildings, to cost 160,000*l*. The *Official Gazette* may be seen at the Library of the R.I.B.A.

NOVEMBER 1. — **City of St. Petersburg.** — MONUMENT TO ALEXANDER II.—Particulars in our issue of August 13, 1910.

DECEMBER 29. — **Glasgow.** — DESIGN FOR A BRIDGE.—Designs are invited (Alexander Thomson Travelling Studentship) for a bridge. Preminums of 60*l*. and 20*l*. are offered. See advertisement in issue of December 24 for further particulars.

NO DATE. — **Inverness.** — REMODELLING OF ASSEMBLY ROOMS.—The Stewards of the Northern Meeting invite designs for remodelling of the Northern Meeting Assembly Rooms in Inverness. See advertisement in issue of March 10 for further particulars.

NO DATE. — **Littleborough.**—SHOP, ETC.—The Littleborough Co-operative Society invite competitive plans for the erection of a branch shop and dwelling-houses at Centre Vale, Littleborough. Full particulars from the offices of the society, 44, Hare Hill-road, Littleborough.

NO DATE. — **Yeovil.** — LAYING-OUT SITE AND HOUSES.—The Yeovil Corporation invite designs for (1) laying-out site; (2) for houses to be erected thereon. Premiums are offered. See advertisement in issue of May 12 for further particulars.

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

MAY 27.—**Bandon, Ireland.**—COTTAGES.—Erection of twenty-seven labourers' cottages. Plans and specifications from Mr. A. Haynes, Clerk, Board-room, Workhouse, on deposit of 5s.

MAY 27. — **Barndarrig, Ireland.**—REPAIRS.—For repairs at the Parochial House. Specification at the offices of Messrs. O'Callaghan & Webb, MM.R.I.A.I., architects, 31, South Frederick-street, Dublin.

MAY 27.—**Castlewellan.**—SHOP, ETC.—Erection and completion of a shop and residence. Plans and specification at Messrs. Porter's, Castlewellan. Messrs. Hobart & Heron, architects, Scottish Provident-buildings, Belfast.

MAY 27.—**Cornwall.**—SCHOOLROOM.—Erection of a new schoolroom at Ruan Major. Plans and specifications with Mr. W. Hosking, near the Chapel.

MAY 27.—**Elgin.**—CONVENIENCES.—Erection of conveniences. Plans and specifications at the Burgh Surveyor's Office.

MAY 27.—**Ravensthorpe.**—HOUSES.—Erection of five houses. Drawings seen, and quantities from Messrs. Joseph Firth & Son, architects, 67, Vulcan-road, Dewsbury.

MAY 29. — **Blackwood, Mon.**—HOUSES.—Erection of seventeen houses, Woodfield. Plans and specifications with Mr. D. J. Thomas, architect, High-street, Blackwood, Mon.

MAY 29.—**Bury.**—LODGE.—Erection and completion of a new entrance lodge at the Bury Infirmary. Quantities from Messrs. Nuttall & Cooper, architects and surveyors, Market-street, Bury.

MAY 29. — **Canterbury.** — HOMES.—Extending Cottage Homes. Drawings and specifications seen, and quantities from Mr. F. H. Doré, architect, 25, Watling-street, Canterbury, on deposit of 2*l*. 2s.

MAY 29. — **Cleckheaton.**—PREMISES.—Erection of business premises. Plans and specifications seen, and quantities from Messrs. R. Castle & Son, architects, London City and Midland Bank-chambers, Cleckheaton.

MAY 29 — **Ebbw Vale.** — CHAPEL.—For new galleries, classrooms, and decorating, Bethel Chapel. Plans and specification seen at "Fernleigh," Libanus-road. Mr. J. P. Davies, Ebbw Vale.

MAY 29.—**Great Yarmouth.**—STABLING.—Erection of stabling. Plans and specifications seen, and quantities from Mr. J. W. Cockrill, M.Inst.C.E., Borough Surveyor, Town Hall, Great Yarmouth.

MAY 29.—**Hellingly.**—SCHOOL.—Erection of a new Council elementary school. Mr. F. J. Wood, County Surveyor, County Hall, Lewes.

MAY 29. — **Kelso.**—RESTORATION.—For restoration of the Kelso Union Poorhouse. Quantities from Mr. J. P. Alison, F.R.I.B.A., architect, Hawick.

MAY 29.—**Totnes.**—ADDITIONS.—For additions to the Seymour Hotel. Plans and specifications with the architect, Mr. W. F. Tollit, 10, High-street, Totnes, Devon.

MAY 30.—**Cardiff.**—CONVENIENCE.—Erection of a public convenience. Drawings and specification seen, and quantities from the City Engineer's Office, City Hall, Cardiff.

MAY 30. — **Flamborough.**—HOUSES.—Erection and completion of four houses. Drawings and specification with Mr. J. Earnshaw, architect, Carlton House, Bridlington.

MAY 30. — **Hayton.** — HOUSE.—Erection of a dwelling-house. Plans and specifications with Mr. J. Henney, architect and surveyor, 39, Senhouse-street, Maryport.

MAY 31.—**Bwlch-y-Cibau.**—SCHOOL.—Erection of additions to the school building. Plan, specification from Mr. R. W. Davies, M.S.A., architect, etc., Carno, Mont.

MAY 31. — **Croydon.** — HALL.—Erection of a small hall. Quantities, on deposit of 1*l*., from Mr. H. Carter Pegg, F.R.I.B.A., 452, London-road, Thornton Heath.

MAY 31. — **Hythe.**—AERATING CHAMBER.—Construction of an aerating chamber at the Bluehouse Waterworks. Particulars from Mr. Chris. Jones, Borough Surveyor, 54, High-street, Hythe, Kent.

MAY 31. — **Manchester.** — BATHROOMS, ETC.—Erection of bathrooms and a waiting-room at Workhouse. Drawings seen, and quantities from Mr. A. J. Murgatroyd, architect, 23, Strutt-street, Manchester, on deposit of 10s. 6d.

MAY 31. — **Manchester.** — ROOMS, ETC.—Construction of classrooms and alterations to the cookhouse, bakehouse, etc. Drawings seen, and quantities from Mr. A. J. Murgatroyd, architect, 23, Strutt-street, Manchester, on deposit of 10s. 6d.

MAY 31.—**Monmouth.**—POLICE-STATION.—Erection of Blackwood Police-station and Petty Sessional Court. Plans and specification seen, and quantities, on deposit of 1*l*. 1s., from Mr. William Tanner, F.S.I., County Surveyor, Newport, Mon.

MAY 31.—**Southmolton.**—CULVERT.—Construction of a culvert. Plan and specifications with Mr. W. S Gardner, the Surveyor to the Council, Rack Mead Cottage, Chittlehampton.

MAY 31.—**Tottington.**—RETAINING WALL.—Rebuilding of a retaining wall and contingent works. Drawings and specifications seen, and quantities from Mr. Lawrence Kenyon, Surveyor to the Council, at the offices, 33, Chapel-street, Tottington.

MAY 31.—**Truro.**—ADDITIONS.—Erection of proposed additions to the Royal Cornwall Infirmary. Plans and specifications with Mr. Alfred J. Cornelius, M.S.A., architect, Truro

MAY 31. — **York.** — HOSPITAL. — Proposed hospital for open-air treatment. Drawings seen, and quantities, on deposit of 1*l*. 1s., from Mr. F. W. Spurr, City Engineer, Guildhall, York.

JUNE 1. — **Drumcliffe, Ireland.**—PRESBYTERY.—For erecting a new Presbytery. Plans and specification with Messrs. William H. Byrne & Son, architects, 20, Suffolk-street, Dublin.

JUNE 1.—**Fochriw.**—ALTERATIONS.—For alterations at the White Horse Inn. Plans seen at No. 112, High-street, Merthyr. Mr. C. M. Davies, M.S.A., Merthyr.

JUNE 1.—**Sedgefield.**—ADDITIONS.—Alterations and additions to the Isolation Hospital. Plans and specifications seen, and form of tender, on deposit of 1*l*., from Mr. James Stones, Surveyor to the Council, Union Offices, Sedgefield.

JUNE 2. — **Bolton.** — HALL.—Erection of the Hardcastle Memorial Hall. Quantities from Mr. Ernest W. Dyson, architect, 17, Lee-lane, Horwich.

JUNE 3. — **Bucksburn, Scotland.** — ALTERATIONS.—For alterations on steading and dairy. Messrs. Chalmers, advocates, 18, Golden-square, Aberdeen.

JUNE 3.—**Macclesfield.**—ALTERATIONS.—Alterations at the Infirmary. Particulars from Mr. A E. Hanrahan, Secretary, General Infirmary, Macclesfield.

JUNE 6. — **Brigg.** — SLUICE DOORS.—Construction and erection of new sluice doors at Ferriby Sluice. Drawings and specifications with Mr. Alfred Atkinson, C.E., the Commissioners' Engineer, 11, Bigby-street, Brigg.

JUNE 6.—**London.**—TELEPHONE EXCHANGE.—Enlargement of Croydon Telephone Exchange. Drawings, specification, and conditions and form of contract with the Postmaster, Croydon. Quantities, on deposit of 1*l*. 1s., from the Secretary, H.M. Office of Works, etc., Storey's-gate, London, S.W.

JUNE 7. — **Chepping Wycombe.**—BATH.—Construction of an open-air swimming bath in the Dyke. Plans and specification seen, and quantities from Mr. T. J. Rushbrooke, Borough Surveyor, 77, Easton-street.

JUNE 8.—**Maghera, Ireland.**—ALTERATIONS.—For alterations and improvements to St. Patrick's Catholic Church. Plans and specifications with Mr. J. P. M'Grath, architect, 6, Castle-street, Derry.

* JUNE 8.—**St. Albans.**—ALTERATIONS AND ADDITIONS.—The Herts Education Committee invite tenders for alterations and additions to the School of Art and Technical Buildings at St. Albans. See advertisement in this issue for further particulars.

JUNE 8.—**Wakefield.**—SCHOOLS, ETC.—Erection of three new schools and asphalting of playgrounds. Plans seen, and specifications, with quantities, on deposit of 1*l*., from the Education Architect, County Hall, Wakefield.

JUNE 9. — **Ardwick-le-Street.**—HOUSE.—Erection of caretaker's house. Plans seen, and quantities, on deposit of 1*l*., from the Education Architect, County Hall, Wakefield.

JUNE 9.—**Blaenporth.**—HOUSE.—Building of a farm-house at Cwmporthman. Plans and specifications from Mr. W. H. Harries, Cwmporthman.

JUNE 9.—**Downpatrick, Ireland.**—RESIDENCE.—Erection of a dispensary residence and dispensary. Plans and specification seen at the Board-room, Workhouse, Downpatrick. Deposit of 2*l*. 2s.

JUNE 10. — **Drumburgh.**—ADDITIONS.—Alterations and additions to Drumburgh Council School. Drawings and specifications with the architect, Mr. J. Forster, M.S.A., 13, Earl-street, Carlisle.

JUNE 10. — **Hereford.**—TOWER.—Restoration of the tower of Ross Church. Specifications at Messrs. Nicholson & Hartree, architects, Offa-street, Hereford.

JUNE 10. — **Pembroke.** — ALTERATIONS.—For alterations and repairs of the Town Hall. Plans and specifications seen, and quantities, on deposit of 5s., from Mr. H. R. Crabb, A.R.I.B.A., Bush-street, Pembroke Dock.

JUNE 12. — **Edinburgh.**—SCHOOL.—Erection of Boroughmuir School, Viewforth. Plans seen, and schedules of measurement from Mr. J. A. Carfrae, architect, 3, Queen-street, Edinburgh.

* JUNE 12. — **Minster-in-Sheppey.** — RECONSTRUCTION OF OFFICES. — The Kent Education Committee invite tenders for reconstruction of offices and connexion to sewer at Council school. See advertisement in this issue for further particulars.

* JUNE 12. — **Minster-in-Sheppey.**—SUMMER REPAIRS.—The Kent Education Committee invite tenders for summer repairs to Council school. See advertisement in this issue for further particulars.

JUNE 12. — **Newcastle-on-Tyne.** — SHED.—Supply and erection of a single-story shed. Quantities, on deposit of 2*l*. 2s., from the City Engineer, Town Hall, Newcastle-upon-Tyne.

JUNE 14.—**King's Norton.**—LODGE.—Erection of a superintendent's lodge. Quantities and specifications from, and plans seen at, the office

BUILDING—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

of the Engineer and Surveyor to the Council, Mr. Ambrose W. Cross, 23, Valentine-road, King's Heath, on deposit of 1*l.* 1s.

✱ JUNE 14.—**London, N.**—RE-POINTING WORK.—The Guardians of St. Leonard, Shoreditch, invite tenders for re-pointing work to chimney shafts at Main Workhouse, Hoxton, N. See advertisement in this issue for further particulars.

✱ JUNE 14 — **Macclesfield.** — SCHOOL.—The Macclesfield Education Committee invite tenders for school building, playsheds, boundary fences, etc., in Athey-street, Macclesfield. See advertisement in this issue for further particulars.

✱ JUNE 14. — **Rotherham.** — HOSPITAL.—The Rotherham Corporation invite tenders for small-pox hospital at Kimberworth, Rotherham. See advertisement in this issue for further particulars.

✱ JUNE 15. — **London, S.W.**—ADDITIONS.—The Wandsworth Guardians invite tenders for additions to engineer's shop at St. John's-hill Infirmary. See advertisement in this issue for further particulars.

JUNE 16.—**Aiskew.**—COTTAGE.—Erection of a cottage at Aiskew. Plan and specification from Mr. T. Linscott, Wycar, Bedale.

JUNE 26.—**Glasgow.**—GRANARY.—Construction of a granary at Meadowside, Partick. Drawings seen, and quantities, on deposit of 5*l.*, from the Trustees' Engineer, 16, Robertson-street, Glasgow.

✱ JUNE 27.—**London, S.E.**—STATIONERY OFFICE, ETC.—The Commissioners of H.M. Works and Public Buildings invite tenders for erection in reinforced concrete of new building for H.M. Stationery Office and Office of Works Stores on a site in Waterloo-road and Stamford-street, S.E. See advertisement in this issue for further particulars.

JULY 3. — **Birr.** — DWELLINGS. — Erection of twenty-eight labourers' and artisans' dwellings. Plans and specifications by Mr. Henry Browne, A.M.Inst.C.E.I., Town Surveyor, Town Hall, Birr.

NO DATE.—**Aberdeen.**—HOUSE.—Erection of a house at Banchory. Schedules from Messrs. Sutherland & George, architects, Aberdeen.

NO DATE. — **Belfast.** — OFFICES.—Erection and completion of new offices, board-room, and stores. Plans and specification with Messrs. Moore & Flanigan, architects, 35, Royal-avenue, Belfast.

NO DATE. — **Cardiff.** — CHURCH.—For building the nave and north aisle of St. Stephen's Church. Plans seen, and quantities, on deposit of 2*l.* 2s., from Mr. E. M. Bruce Vaughan, F.R.I.B.A., architect, 21, Dumfries-place, Cardiff.

NO DATE. — **Douglas, Isle of Man.** — HALL, ETC.—Erection of a large concert hall and other buildings. Quantities, on deposit of 2*l.* 2s., from Mr. Percy Robinson, F.R.I.B.A., and W. Alban Jones, architects, 2, Albion-place, Leeds.

NO DATE.—**Durham.**—HALL, ETC.—Erection of parochial hall and institute at Southmoor. Plans with Mr. J. Garry, F.R.I.B.A., architect, 47, Church-street, West Hartlepool.

NO DATE. — **Harrow.** — HOUSES.—Erection of four houses on the Weald Village Estate. Plans and specifications with Messrs. Belfrage & Saville, architects, 27, Chancery-lane, W.C.

NO DATE. — **Knutsford.** — CLUB-HOUSE.—Erection of a working men's club-house. Deposit of 1*l.* to Mr C. R. Longe, Tatton Park Estate Office, Knutsford.

NO DATE. — **Penrhiwceiber.** — ADDITIONS.—Alterations and additions to No. 1, Railway-terrace. Apply to the architects, Messrs. Morgan & Elford, 1, Jeffrey-street, Mountain Ash.

NO DATE. — **Porth.** — HOUSE, ETC.—Erection of the Rhondda Mining Rescue Station and instructor's house. Quantities from Messrs. Teather & Wilson, FF.R.I.B.A., architects, Andrews-buildings, Queen-street, Cardiff.

NO DATE.—**Port Talbot.**—VICARAGE.—Building a vicarage at Avon Vale. Plans and specification seen, and quantities on deposit of 1*l.* 1s., from Mr. Mansel H. Hunter, architect and surveyor, The Square, Neath.

NO DATE. — **Radcliffe.** — PICTURE DROME. — Erection of picture drome. Apply for particulars to Mr. George E. Tonge, L.R.I.B.A., architect, 371, Lord-street, Southport.

ENGINEERING, IRON, AND STEEL.

MAY 29. — **Glasgow.** — SUPERSTRUCTURE.—Renewal of the superstructure of the flood spans of Caldew Viaduct, for the Caledonian Railway Company. Drawings seen at the office of the Company's Engineer, Buchanan-street Station, Glasgow. Specification on deposit of 2*l.* 2s.

MAY 31. — **Swinton.** — HEATING. — Complete heating installation at the Council school, Pendlebury. General conditions from Mr. W. T. Postlethwaite, Secretary to the Committee, Council Offices, Swinton, Manchester.

JUNE 7. — **Mellor.** — BRIDGE. — Widening of Cataract Bridge. The drawings and specification seen, and quantities from Mr. J. W. Horton, A.M.Inst.C.E., County Surveyor, County Surveyor's Office, Derby.

JUNE 8.—**Maghera, Ireland.**—HEATING.—For heating St. Patrick's Catholic Church. Plans and specifications with Mr. J. P. M'Grath, architect, 6, Castle-street, Derry.

JUNE 8. — **Rochdale.** — WATER SUPPLY.—For installation of hot-water supply at new infirmary. Specifications, on deposit of 1*l.* 1s., from Mr. R. A. Leach, Union Clerk, Union Offices, Townhead, Rochdale.

JUNE 12. — **Beckenham.** — WIRING.—Electric wiring of houses. Specifications from the Resident Engineer, Mr. J. E. Tapper, Electricity Works, Church Fields-road, Beckenham, on deposit of 2*l.* 2s.

JUNE 12. — **Belfast.** — LIGHTING. — Electric lighting installations in two new villas. Drawings seen, and specification, on deposit of 10s., from Mr. R. Meyer, Town Clerk.

JUNE 16. — **London.** — STEAM MAINS. — The Metropolitan Asylums Board invite tenders for installing new steam mains at the North-Eastern Fever Hospital, St. Ann's-road, Tottenham, N. Drawings and specification at the office of the Board, Embankment, London, E.C., on deposit of 2*l.*

JUNE 30. — **Bakewell.**—RESERVOIR.—Construction of a concrete service reservoir. Drawings seen, and specification and quantities, on deposit of 2*l.* 2s., from Messrs. Brady & Partington, Engineers to the Council, Town Hall, Chapel-en-le-Frith.

NO DATE.—**Hemsworth.**—LIGHTING.—Electric lighting installation to new Hippodrome at Hemsworth, near Wakefield Specification from Mr. W. E. Richardson, architect, Rothwell, Leeds.

FURNITURE, PAINTING, MATERIALS, etc.

MAY 27.—**Llanfyllin.**—WHITEWASHING.—Specification with Mr. T. Edwards, Clerk to the Guardians, 10, Market-street, Llanfyllin.

MAY 29. — **Ballycarry, Ireland.**—PAINTING.—For painting the Congregational property, for the Ballycarry Presbyterian Church. Specifications at The Manse.

MAY 29.—**London.**—WHITEWASHING.—Cleansing and whitewashing the latrines and urinals at nineteen schools, for the East Ham Education Committee. Specifications seen, and forms of tender, on deposit of 5*l.*, from Mr. H. C. Padgett, Secretary, Education Office, East Ham, E.

MAY 29. — **Manchester.** — PAINTING. — For painting at Clayton Hospital. Specifications, on deposit of 1*l.* 1s., from City Architect, Town Hall, Manchester.

MAY 29.—**Tring.**—PAINTING.—For painting at the isolation hospital. Specifications from Mr. S. S. Gettings, Surveyor, Tring.

MAY 30. — **Greenwich.** — PAINTING.—Internal and external repainting of the Branch Library. Specification from Mr. Francis Robinson, Town Clerk, Town Hall, Greenwich.

MAY 30. — **Llandaff.** — PAINTING. — Internal painting of offices. Specification with the Surveyor, Mr. James Holden, A.M.Inst.C.E., 20, Park-place, Cardiff.

✱ MAY 31.—**Bournville.**—CLEANING AND PAINTING.—The Midland Railway Company invite tenders for cleaning and painting engine-shed, offices, etc. See advertisement in this issue for further particulars.

MAY 31. — **Handsworth.**—PAINTING.—For the painting, etc., of the exterior and interior of the senior department of Birchfield-road Schools. Specification from Mr. J. F. Ingram, Education Offices, Soho-hill, Handsworth, Staffs.

MAY 31.—**Lanchester.**—PAINTING.—For painting of the Workhouse buildings. Specifications from Mr. G. Thomas Wilson, L.R.I.B.A., architect, 22, Durham-road, Blackhill, Co. Durham.

✱ MAY 31.—**London, E.**—CLEANING AND PAINTING.—The Midland Railway Company invite tenders for cleaning and painting Goods Depôt at Poplar Docks. See advertisement in this issue for further particulars.

MAY 31. — **Swallownest.** — WHITEWASHING.—For whitewashing the wards of the hospital. Messrs. Creswick & Son, Clerks to the Committee, 9, East-parade, Sheffield.

JUNE 1.—**Leeds.**—PAINTING.—Cleaning and painting the steel bridge over the River Aire at the Rodley Sewage Farm. Contract documents, on deposit of 2*l.* 2s., from the Sewerage Engineer's Office, Great George-street, Leeds.

JUNE 1. — **London.** — PAINTING.—For painting work at Infirmary at East Dulwich-grove, S.E. Specification from Mr. S. Wood, Clerk, 51, Ufford-street, Blackfriars-road, London, S.E.

JUNE 2.—**Colwyn Bay.**—PAINTING.—For painting gas plant. Specification from Mr. J. Smith, Gas Engineer, Colwyn Bay.

JUNE 3. — **Aberdeen.** — LIMEWASHING.—Limewashing of courts, closes, and bridges. Specification at the Sanitary Inspector's Office, 41½, Union-street, Aberdeen.

JUNE 13.—**Halifax.**—PAINTING.—For the painting of schools. Specifications, on deposit of 5*l.*, from Mr. J. Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax.

JUNE 13. — **Southall.**—GATES, ETC.—Supplying and fixing entrance gates and wrought-iron unclimbable fencing. Drawings and specification seen, and form of tender from Mr. Reginald Brown, A.M.Inst.C.E., F.S.I., etc., Engineer and Surveyor to the Council, Public Offices, Southall, Middlesex.

✱ JUNE 15. — **London, S.W.** — PAINTING.—The Wandsworth Guardians invite tenders for painting works, etc., at St. John's-hill Infirmary. See advertisement in this issue for further particulars.

✱ JUNE 17. — **Dartford.** — CLEANING, PAINTING, ETC. — The Metropolitan Asylums Board invite tenders for cleaning, painting, and repairing works and alterations at Southern (Convalescent) Fever Hospital, Dartford, Kent. See advertisement in this issue for further particulars.

✱ JUNE 17.—**Littlehampton.**—CLEANING, PAINTING, ETC.—The Metropolitan Asylums Board invite tenders for cleaning, painting, and repairing works and alterations at Millfield, Rustington, near Littlehampton, Sussex. See advertisement in this issue for further particulars.

✱ JUNE 17.—**London, S.E.**—CLEANING, PAINTING, ETC.—The Metropolitan Asylums Board invite tenders for cleaning, painting, and repairing works and alterations at Park Hospital for Children, Hither Green, Lewisham, S.E. See advertisement in this issue for further particulars.

✱ JUNE 19.—**W. Ham.**—IRON STAIRCASES.—The W. Ham Education Committee invite tenders for construction of two iron staircases at two schools. See advertisement in this issue for further particulars.

✱ JUNE 19.—**W. Ham.**—PAINTING AND CLEANSING.—The W. Ham Education Committee invite tenders for painting and cleansing various schools. See advertisement in this issue for further particulars.

NO DATE. — **Cardiff.**—PAINTING.—For painting the outside of the Splott Conservative Club. Specifications from the Secretary, at the club, 36, Habershon-street, Cardiff.

ROADS, SANITARY, AND WATER WORKS.

MAY 27. — **Berwick-upon-Tweed.** — METAL.—Supply of machine-broken road metal. Schedules and specifications from Mr. Robt. Dickinson, Borough Surveyor, Berwick-upon-Tweed.

MAY 27. — **Southwick.** — FLINTS.—Supply of hand-picked flints. Forms of tender from Mr. Geo. W. Warr, Surveyor to the Council, Town Hall, Southwick, Sussex.

MAY 29.—**Cleckheaton.**—SEWER.—Construction of sewer. Drawings seen, and specifications and quantities from Mr. Clifton Lund, Engineer and Surveyor, Town Hall, Cleckheaton, on deposit of 2*l.* 2s.

MAY 29. — **Harrogate.** — STREETS. — Private street works. Quantities from Mr. C. E. Rivers, A.M.Inst.C.E., Borough Engineer and Surveyor.

MAY 29.—**Othery.**—SEWER.—For laying stone-ware pipe sewer. Drawings seen, and quantities from the Engineer, Mr. W. A. Collins, 56A, Eastover, Bridgwater.

MAY 29. — **Southgate.** — STREETS. — For the private street improvements. Plans seen, and specification, on deposit of 2*l.*, from the Surveyor, Mr. C. G. Lawson, C.E., Council Offices, Palmer's Green, N.

MAY 30. — **Bootle.** — STREETS. — For private street works. Plans seen at the Borough Engineer's Office.

MAY 30.—**Bramley.**—SEWERAGE.—For construction of sewers. Plans seen, and quantities from Mr. B. Hey, Surveyor, Imperial-buildings, Rotherham, on deposit of 1*l.* 1s.

MAY 30. — **Godalming.** — REPAVING.—For repaving main streets of the borough. Particulars, on deposit of 1*l.* 1s., from Mr. J. H. Norris, Borough Surveyor, Municipal Buildings, Godalming.

MAY 30. — **Whitchurch.** — STREETS. — Private street improvement works. Plans and specification seen, and quantities from the Surveyor, Mr. James Holden, A.M.Inst.C.E., Park House, 20, Park-place, Cardiff.

MAY 31.—**Brecon.**—ROAD.—For road improvement. Drawings seen, and quantities, on deposit of 1*l.* 1s., from Mr. W. L. Harpur, County Roads Surveyor, County Hall, Brecon.

MAY 31. — **Horbury.** — PAVING.—For kerbing, flagging, concreting, paving, etc., on the main road. Drawings and specifications seen, and quantities from Mr J. H. Drew, Engineer and Surveyor, Town Hall, Horbury, on deposit of 1*l.* 1s.

MAY 31. — **Thurlstone.** — ASPHALTING.—For asphalting schoolyard. Specifications from Mr. W. Wood, Divisional Clerk, Penistone, Yorks.

JUNE 1.—**Chiswick.**—ROAD.—For the making-up of roads. Forms of tender from Mr. E. Willis, A.M.Inst.C.E., Surveyor, Town Hall, Chiswick.

JUNE 1. — **Glasgow.** — PAVING.—For paving works, etc. Drawings seen, and specifications from the office of Public Works, City-chambers, 64, Cochrane-street.

JUNE 1. — **Oban.** — ROADS. — Repair of roads. Specification from the District Road Surveyor, Mr. Kenneth Macrae, Columba-buildings, Oban.

JUNE 1. — **Oban.** — ROAD. — Widening and improvement of sections of road. Plans and specification seen, and quantities from the District Road Surveyor, Mr. Kenneth Macrae, Columba-buildings, Oban.

JUNE 5. — **Auckland.**—STREETS.—Private street works. Plans and specifications seen, and particulars from Mr. Charles Heslop, Sanitary Surveyor, 9, Cradock-street, Bishop Auckland.

JUNE 6.—**Barnet.**—MATERIALS.—For supply of broken granite. Particulars from Mr. W. F. Wilkins, Surveyor, 40, High-street, Barnet.

JUNE 6. — **Boston.** — SEWER.—Covering in a sewer. Specifications with Mr. John Stephenson, the Inspector of the Council, Municipal Buildings, West-street, Boston.

JUNE 7. — **Sefton.** — MATERIALS. — Supply of materials, etc. Mr. Harris P. Cleaver, Clerk to the Council, Brougham-terrace, West Derby-road, Liverpool.

JUNE 12.—**Bromley.**—SEWERAGE.—Laying of a surface-water sewer in Beaconsfield-road, Mottingham. Plan and sections seen, and specifications, on deposit of 10s. 6d., from the Council's Surveyor, Maulden House, Sidcup-hill, Sidcup, Kent.

JUNE 12. — **Bromley.** — STREETS. — Works of sewering, levelling, etc. Plans and sections seen, and specifications, on deposit of 10s. 6d., from the Council's Surveyor, Maulden House, Sidcup-hill, Sidcup, Kent.

✱ JUNE 12. — **London, S.E.** — ROAD-MAKING.—The Camberwell B.C. invite tenders for kerbing, channelling, foundations for asphalt paving, and roadwork in Court-lane (Dulwich Village to Eynella-road). See advertisement in this issue for further particulars.

JUNE 13. — **Glyncorrwg.** — SEWERAGE. — Construction of a main intercepting sewer. Plans and specifications seen, and quantities, on deposit of 10*l.*, from the Council Offices, Cymmer (*viâ* Port Talbot or Bridgend), Glamorgan.

JUNE 17. — **Houghton Regis.** — SEWERAGE.—Construction of sewers. Plans inspected and quantities, on deposit of 2*l.* 2s., from Mr. B. B. Franklin, 21, Market-hill, Luton, Surveyor to the Council.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*ENGINEER	Glamorgan County Asylum...	175*l.* per annum	May 30
*TEACHER OF BUILNDING CONSTRUCTION	L.C.C.	See advertisement in this issue	June 5
*TEACHER OF PAITING AND DECORATING	L.C.C.	See advertisement in this issue	June 5
*CLERK OF WORKS	Essex C.C.	3*l.* per week	June 9
*TEACHERS	West Ham Technical Inst. ...	See advertisement in this issue	No date.
*CLERK OF WORKS	Derbyshire C.C.	3*l.* 3*s.* per week	No date.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*BUILDER & CONTRACTOR'S STOCK, PLANT, & MCHRY.—At 242A, Commercial-rd., E.C.	H. W. Smith	May 29
*TIMBER AND BUILDING MATERIAL, OLD KENT-ROAD, S.E.—On the Premises	Veryard & Yates	June 1
*SURPLUS JOINERY, MOULDINGS, DOORS, SASHES, ETC., READING—On the Prems.	F. W. Allwright	June 8
*BUILDING SITE, LONDON—At the Mart	Norton, Trist, & Gilbert	June 12
*FREEHOLD BUILDING SITE, FINSBURY—At the Mart	Norton, Trist, & Gilbert	June 12
*ENGINEERING WORKS, PLANT, MACHINERY, STK., ETC., CROYDON—On the Prems.	Henry Sherley-Price	June 13
*FREEHOLD BUILDING SITE, BRIXTON-HILL AND ACRE-LANE, S.W.—At the Mart	Edwin Fox, Bousfield, Burnetts, & Baddeley	June 13
*FREEHOLD PROPERTY, FLEET-STREET, E.C.—At the Mart	Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co.	June 14
*FREEHOLD BUILDING SITE, OXFORD-STREET, W.—At the Mart	Edwin Fox, Bousfield, Burnetts, & Baddeley	June 15
*FREEHOLD ESTATE, BECKENHAM—At the Mart	Debenham, Tewson, Richardson, & Co.	June 15

PATENTS—*Continued from page* 660.

19,546 of 1910.—John Willans Wooding: Construction of tiles for use in forming openings in walls.

19,634 of 1910.—Charles McRae Grey: Rolling of flanged metal sections.

20,156 of 1910.—Laurence Maxwell Waterhouse: Ceiling roses for electric light pendant fittings and the like.

21,860 of 1910.—Thomas Wilfred Woodhouse: Syphon-discharge flushing cisterns.

23,388 of 1910.—John Crispin: Step-ladder.

24,767 of 1910.—Willem Carel Johannes Van der Meyden: Roller blinds or awnings and means for raising and lowering the same.

26,977 of 1910.—Albert Edward Downes: Device for holding or clipping ladders to eaves, spouts, cornices, and the like.

27,142 of 1910.—Olaf Kesler: Process for the manufacture of artificial stone.

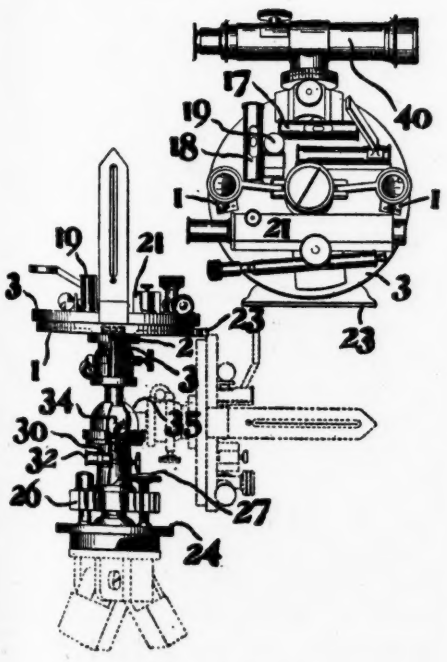
27,650 of 1910.—John McDonald: Pneumatic tools.

28,653 of 1910.—George Harris: Ventilating or rain-water pipes.

SELECTED PATENTS.

30,319 of 1910.—Edgar Hasker Vincent Melvill: Surveying instruments.

This relates to a surveying instrument using the same graduated circle for measuring both vertical and horizontal angles. The limb 1 is formed with a threaded socket 2 for securing it to its support, and carries the alidade 3, provided with levels 17, 18 at right-angles for setting the limb and alidade horizontal and a perpendicular level 19 for vertical setting. A magnetic compass 21 is also fitted to the alidade. When in use as a clinometer for setting on inclined surfaces, a fiduciary surface 23 is attached to the limb,

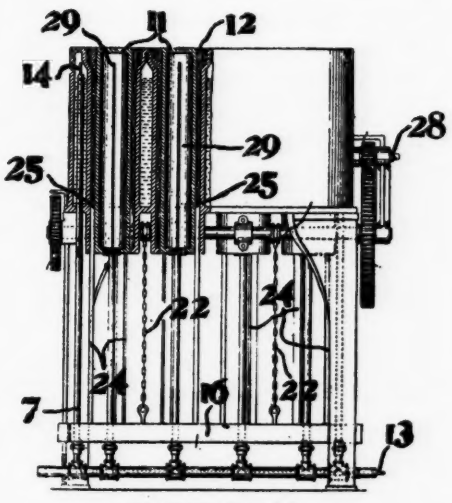


30,319 of 1910.

in such a manner that, when the reading is zero, the surface is parallel with the line of sight. The support comprises a base-plate 24 and a levelling-plate 26 adjusted by screws 27. The plate 26 carries the socket 30 provided with a level 32, and at its upper end with a ball-and-socket joint 34. A slot 35 at one side of the joint permits the ball and fittings above it to turn through an angle not less than 90 degrees. The ball 34 carries a socket supporting the limb 1 to facilitate orientation. The alidade may thus be placed at any angle to the horizontal. A sighting-telescope 40 is positioned about the level of the alidade and eccentric to it, and is pivoted to revolve in a vertical plane.

30,167 of 1909.—Albert Alonzo Pauly: Moulding building-blocks.

This relates to an apparatus for moulding sewer pipes and hollow building-blocks from cementitious material. A pipe-moulding apparatus is provided in which the cores 11 and mould walls are made hollow and their interiors are connected by pipes 14, 29 to a steam pipe 13. The water condensing in the hollow mould walls is led away by overflow pipes 7 of such a length as to cause the socket end of the pipe to be heated by steam and



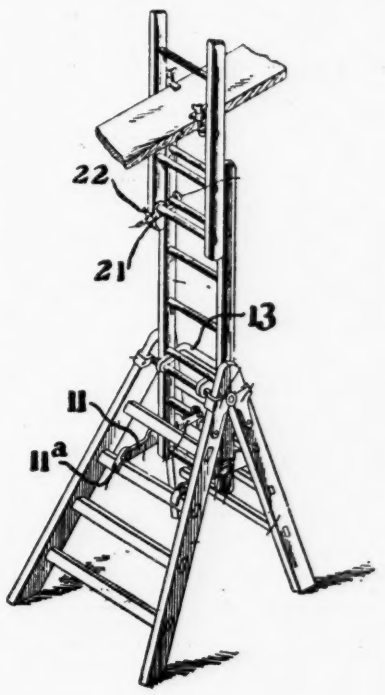
30,167 of 1909.

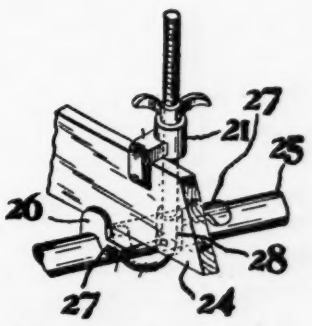
the thinner portion below by the condensation water. The water condensing in the cores is led away by the core-supporting pipes.

The pipes or blocks are removed when moulded by means of stripping devices consisting of pallets 25 supported by ejector-bars 24 on a cross-head 16, which is operated through chains, parallel shafts, and toothed gearing by a driving-shaft 28. Detachable rings 12 are secured to the upper ends of the cores to form the socket parts.

663 of 1910.—Wright Liford Glidden: Ladder scaffolding.

This relates to extension ladders on which staging can be supported, and consists in providing double ladders forming the base, and a single ladder centrally disposed between the double ladder and supported by it, additional extension being obtained by clamping a single ladder to the central extension. The base ladders are connected together by hinges provided with jaws embracing the ladder sides, and are held apart by toggle links 11 pivoted together and to clips 11a engaging the rungs. The central extension is supported by a bar 13, pivoted on the top rung of one of the base





663 of 1910.

ladders, engaging underneath a rung on the extension, and resting on the top rung of the other base ladder, and is further supported by jaws on the toggles engaging the ladder sides. Double jaw screw-clamps are used to secure various members together. The clamp shown comprises a threaded shaft with a hook-shaped end for engaging one member 25, a plate on which a second member 24 rests and which is formed with end lugs 26, 27 and a sleeve 28 to engage the screwed shaft, a jaw to engage the member 24 and formed on a sleeve 21, and a clamping-nut.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 9.—By CRAWTER.

Waltham Cross, Essex.—Trinity Marsh-la., two copyhold cottages	£200
Park-la., two freehold cottages	300
Cheshunt, Herts.—1 to 20, Cecil-rd., f., w.r. 312*l.*	2,750
Two freehold cottages, w.r. 41*l.* 12*s.*	280

May 10.—By KEMSLEY.

Romford.—Elm-rd., May Villa, f.	270
156, London-rd., u.t. 30¼ yrs., g.r. 3*l.* 8*s.*, w.r. 23*l.* 8*s.*	100
1 to 10, Albion-st., u.t. 21¼ yrs., g.r. 4*l.* 4*s.*, w.r. 107*l.* 18*s.*	400

By ROBT. NEWMAN.

Heston, Middlesex.—The Manor House and Heston House, 11 a., f.	2,825
Twenty acres plantation, 19 a. 3 r. 36 p., f.	3,600
Enclosures of arable land, 21 a. 0 r. 3 p., f.	1,575
Nicholes Cottages, f.	250
Sutton Manor House and 8 a. 0 r. 14 p., f.	3,000

May 11.—By WHEELER & SON.

Bures St Mary, Suffolk.—High Pale, eight cottages and 80 a. 1 r. 19 p., f.	3,165

May 12.—By THOS. SHARP.

Canning Town.—311 to 317 (odd), Beckton-rd., f., y.r. 100*l.*	1,195
Beckton-rd, block of building land, f.	875

By H. W. & C. SPELMAN.

Norwich.—46, London-st. (business premises), f.	4,000
Pottergate-st., warehouse and two cottages, f.	260
Colegate-st., factory, f.	490

By FAREBROTHER, ELLIS, & Co.

Manchester, Lancs.—Hardman-st., motor garage, f.	3,000
37 and 39, Hardman-st., 14 to 24 (even), Joddrell-st., f.	1,200

May 13.—By WOODS & Co.

Gayton, Northants.—Pasture and arable land, 35½ a., f.	1,010
Four cottages, f.	115

May 15.—By FURBER.

Kew.—1 and 2, Clarence-rd., u.t. 69 yrs., g.r 8*l.*, y. and e.r. 64*l.*	500
Clapton.—Glyn-rd., etc., f.g. rents 23*l.*, reversion in 67 yrs.	485

By WM. HOUGHTON.

Walthamstow.—Church-lane, The Chestnuts and 2¾ a., f. and c.	1,200
102 and 104, Northcote-rd., f., w.r. 46*l.* 16*s.*	305
98 and 100, Northcote-rd., u.t. 72 yrs., g.r. 10*l.* 10*s.*, w.r. 52*l.*	120

By HENRY HOLMES & Co.

Oxford-st.—66 and 67, Castle-st. East (s.), u.t. 62 yrs., g.r. 72*l.*, gross rental 545*l.*	4,650
Kentish Town.—2 to 8 (even), Grafton-ter., u.t. 35 yrs., g.r. 25*l.* 4*s.*, y.r. 128*l.*	725
Surbiton.—Ewell-rd., f.g. rents 30*l.*, reversion in 67 yrs.	750
Fulham.—314, Fulham-rd., u.t. 12½ yrs., g.r. 7*l.*, p.	155

May 16.—By BEADEL, WOOD, & Co.

Sonning, Berks.—Park View, and 1 a., f.	800

By BROWETT & TAYLOR.

Norwood.—High-st., Cumberlow and 7 a., f.	4,200
Greenwich.—17, Ashburnham-gr., u.t. 36 yrs., g.r. 3*l.* 14*s.*, y.r. 26*l.*	170

By HARLAND & SON.

Watford, Herts.—8, 10, and 12, St. Johns-rd., f., y.r. 95*l.*	1,050

By HULBERT & HAYSMAN.

Brixton.—25, Wiltshire-rd., u.t. 51 yrs., g.r. 13*l.*, p.	200

By FREDERICK WARMAN.

Highbury.—5, Lucerne-rd., u.t. 70 yrs., g.r. 8*l.*, y.r. 42*l.*	360

By NICHOLAS.

Goring, Oxon.—Battle-rd., garden site, f.	18 0

May 17.—By CHESTERTON & SONS.

Notting Hill.—Pembridge-rd., f.g.r. 30*l.*, reversion in 27 yrs.	850
Kensington.—27, Elsham-rd., u.t. 50 yrs., g.r. 12*l.*, e.r. 80*l.*	350

By CHAS. CANEY.

Camberwell.—97, Knatchbull-rd., u.t. 57 yrs., g.r. 20*l.*, p.	650

By H. DONALDSON & SONS.

Muswell Hill.—Barrington-rd., f.g. rents 19*l.* 10*s.*, reversion in 84 and 88 yrs.	450
Abbeville-rd., f.g. rents 32*l.* 10*s.*, reversion in 87 yrs.	755
Barnsbury.—5, Market-st., u.t. 42 yrs., g.r. 6*l.*, w.r. 57*l.* 4*s.*	160
Edmonton.—24, Raynham-av., f., w.r. 19*l.* 10*s.*	100
Clapton.—60, Cricketfield-rd., f., p.	305

By FAREBROTHER, ELLIS, & Co.

Seaford, Sussex.—Richmond-rd., West End Riding School and 2 r. 34 p., f.	2,600
Belgrave-rd., etc., building land, 4 a. 3 r. 4 p., f.	2,650

By DOUGLAS YOUNG & Co.

Shanklin, I.O.W.—Clarence-rd., Hillside, u.t. 963 yrs., g.r. 12*l.*, p.	825

May 18.—By C. C. & T. MOORE.

Old Ford.—69, 71, 75, 77, 79, 97, 99, 101, 105 to 111, 119 to 133 and 161 to 169 (odd), Monier-rd., u.t. 66 yrs., g.r. 91*l.*, w.r. 608*l.* 8*s.*	1,300
Mile End.—137 to 143 (odd), West-st., f., w.r. 88*l.* 2*s.*	595
Limehouse.—15, Clemence-st., u.t. 50 yrs., g.r. 4*l.*, w.r. 42*l.* 18*s.*	200
Ilford.—1 to 19, St. Mary's Cottages, u.t. 81 yrs., g.r. 9*l.* 10*s.*, w.r. 32*l.* 2*s.*	210

By NEWBON & SHEPHARDS.

Kentish Town.—1, 12, 14, 15, and 34, Bartholomew Villas, u.t. 47½ yrs., g.r. 33*l.*, y.r. 230*l.*	1,980
Mile End.—28 and 53, Carlton-rd., u.t. 13 yrs., g.r. 6*l.* 3*s.*, y.r. 56*l.*	205
Camberwell.—Haymerle-rd., f.g.r. 25*l.* 4*s.*, reversion in 57 yrs.	£485
East Ham.—Fairview-ter., f.g. rents 42*l.* 15*s.*, reversion in 69 yrs.	865
Hornsey.—Myddelton-rd., f.g. rents 14*l.*, reversion in 63 yrs.	280

By OAKLEY, FISHER, & Co.

Woolwich.—Nightingale-place, f.g. rents 12*l.*, reversion in 72 yrs.	240
Yiewsley, Middlesex.—The Firs, u.t. 56 yrs., g.r. 2*l.* 10*s.*, p.	220

By STIMSON & SONS.

Peckham.—155 and 159, Rye-lane (s), u.t. 53 yrs., g.r. 20*l.*, y.r. 240*l.*	2,800
Lambeth.—195, 197, 201, 203, 205, and 209, Lambeth-walk (s), f., y.r. 400*l.*	5,050
81, 82, and 83, Princes-rd. (s), f., y.r. 108*l.* 14*s.*	1,150
87 to 90, Princes-rd., f., w.r. 156*l.* 4*s.*	1,270
1 to 6, 31 and 32, Wood-st., f., w.r. 332*l.* 16*s.*	2,200
11 to 21, Ward-st, f., w.r. 353*l.* 18*s.*	2,360

By DANIEL WATNEY & SONS.

Pimlico.—1 and 3, Denbigh-st., also 30A, Warwick-st. (s), u.t. 26¾ yrs., g.r. 16*l.*, y.r. 250*l.*	2,200
Shadwell.—60 and 62, Sutton-st. East (including the Railway Arms b.h.), and 35, Station-pl., f., y.r. 75*l.*	1,040

May 19.—By MARK LIELL & SON.

Ilford.—130 to 138 (even), Hampton-rd., f., w.r. 123*l.* 10*s.*	1,020
Manor Park.—151 to 173 (odd), Rosebery-av., f., w.r. 313*l.* 6*s.*	2,465
Bow.—2, Bow-rd., f., e.r. 30*l.*	350
Forest Gate.—91, 125, and 127, Wellington-rd., f., w.r. 59*l.* 16*s.*	360
East Ham.—31, Caulfield-rd., u.t. 89 yrs., g.r. 4*l.* 10*s.*, w.r. 24*l.* 14*s.*	100

By SELFE & Co.

Camberwell.—Denman-rd., etc., f.g. rents 26*l.* reversion in 53 yrs.	720
Dulwich.—Barry-rd., f.g. rents 65*l.* and peppercorn, reversion in 87 yrs.	1,620
Upland-rd., f.g.r. 18*l.*, reversion in 67 yrs.	450
Dunstan-rd., f.g. rents 14*l.*, reversion in 88½ yrs.	280
Underhill-rd., plot of land, f.	200
Peckham.—Rye-la., f.g.r. 155*l.*, reversion in 91 yrs.	3,990
The Rye, f.g.r. 150*l.*, reversion in 68 yrs.	3,000
Lambeth.—48, Clapham-rd., f., y.r. 40*l.*	600

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PUBLISHER'S NOTICES.

Nat. Tel., 6113 Gerrard. Telegrams, "The Builder, London."

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PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent; but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the Office*, 4, Catherine Street, Strand, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed), 1s.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£	s.	d.
Best Stocks	1	13	0
Picked Stocks for Facings	2	10	0

BRICKS, &c. (*continued*).

Per 1000, Delivered at Railway Depôt.

	£	s.	d.		£	s.	d.
Flettons	1	9	0	Double Headers	13	7	6
Best Fareham Red	3	12	0	One Side and two Ends	17	7	6
Best Red Pressed Ruabon Facing	5	0	0	Two Sides and one End	18	7	6
Best Blue Pressed Staffordshire	3	15	0	Splays & Squints	15	17	6
Do. Bullnose	4	0	0	Best Dipped Salt Glzd. Str'tch'rs	10	17	6
Best Stourbridge Fire Bricks	3	14	0	Headers	10	7	6
GLAZED BRICKS.				Quoins, Bullnose, and Flats	14	7	6
Best White and Ivory Glazed Stretchers	10	17	6	D'ble Stretchers	16	7	6
Headers	10	7	6	Double Headers	13	7	6
Quoins, Bullnose, and Flats	14	7	6	One Side and two Ends	17	7	6
D'ble Stretchers	16	7	6	Two Sides and one End	18	7	6
				Splays & Squints	15	17	6

Second Quality White and Dipped Salt Glazed, £1 5s. per 1000 less than best.

	s.	d.	
Thames and Pit Sand	6	9	per yard, delivered.
Thames Ballast	5	3	" "
Best Portland Cement	29	0	per ton, "
Best Ground Blue Lias Lime	19	0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s.	d.
BATH STONE — delivered on road waggons, Paddington Depôt	1	6½
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½

Per Ft. Cube, delivered at Railway Depôt.

	s.	d.		s.	d.
Ancaster in blocks..	1	10	Closeburn Red Freestone	2	0
Beer in blocks	1	6	Greenshill in blocks	1	10
Darley Dale in blocks	2	4	Red Mansfield Freestone	2	4
Red Corsehill in blocks	2	3	Talacre & Gwespyr Stone	2	8

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt. s. d.
Scappled random blocks 2 10

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3
6 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½
1½ in. to 2 in. ditto, ditto	0 6

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.

Scappled random blocks 3 0

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£	s.	d.	In. In.	£	s.	d.
20×10 best blue Bangor	13	2	6	20×10 best Eur'ka unfading green	15	17	6
20×12 ditto	13	17	6	20×12 ditto	18	7	6
20×10 1st quality ditto	13	0	0	18×10 ditto	13	5	0
20×12 ditto	13	15	0	16×8 ditto	10	5	0
16×8 ditto	7	5	0	20×10 permanent green	11	12	6
22×10 best blue Portmadoc	12	12	6	18×10 ditto	9	12	6
16×8 ditto	6	12	6	16×8 ditto	6	12	6

TILES.

At Railway Depôt.

	s.	d.		s.	d.
Best plain red roofing (per 1000)	42	0	Do. Ornamental (per 1000)	52	6
Hip and Valley (per doz.)	3	7	Hip and Valley (per doz.)	4	0
Best Broseley (per 1000)	50	0	Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57	6
Do. Ornamental (per 1000)	60	0	Do. Ornamental (per 1000)	50	0
Hip (per doz.)	4	0	Hip (per doz.)	4	0
Valley (per doz.)	3	0	Valley (per doz.)	3	6
Best "Hartshill" brand, plain sand-faced (per 1000)	50	0	Staffords. (Hanley) Reds or Brindled (per 1000)	42	6
Do. pressed (per 1000)	47	6	Hand-made sand-faced (per 1000)	45	0
			Hip (per doz.)	4	0
			Valley (per doz.)	3	6

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.		£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14	0	0	...	15	10	0
Deals: best 3 by 9	13	10	0	...	14	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	10	0	...	12	10	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.			
Deals: seconds	1	0	0	less than best.			
Battens: seconds	0	10	0	"		"	
2 in. by in. and 2 in. by 6 in.	9	10	0	...	10	10	0
2 in. by 4½ in. and 2 in. by 5 in.	9	0	0	...	10	0	0

WOOD (*Continued*).

BUILDING WOOD (*Continued*).

	£ s. d.	£ s. d.
Foreign Sawn Boards—		
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¼ in.	1 0 0	»
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 5 0 0 ...	5 10 0
Seconds	4 10 0 ...	5 0 0
Small timber (8 in. to 10 in.)	3 17 6 ...	4 0 0
Small timber (6 in. to 8 in.)	3 5 0 ...	3 10 0
Swedish balks	2 12 6 ...	3 0 0
Pitch-pine timber (30 ft. average)	4 10 0 ...	5 5 0

JOINERS' WOOD. At per standard.

White Sea: first yellow deals, 3 in. by 11 in.	24 10 0 ...	25 10 0
3 in. by 9 in.	22 10 0 ...	23 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0 ...	18 0 0
Second yellow deals, 3in. by 11in.	19 0 0 ...	20 0 0
» » 3 in. by 9 in.	18 0 0 ...	19 10 0
Battens, 2½ in. and 3in. by 7 in.	14 0 0 ...	15 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0 ...	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0 ...	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 10 0 ...	22 10 0
Do. 3 in. by 9 in.	18 10 0 ...	19 10 0
Battens	14 0 0 ...	15 0 0
Second yellow deals, 3 in. by 11 in	16 10 0 ...	17 10 0
Do. 3 in. by 9 in.	15 0 0 ...	16 0 0
Battens	11 10 0 ...	12 10 0
Third yellow deals, 3in. by 11 in.	13 10 0 ...	14 10 0
Do. 3 in. by 9 in.	13 0 0 ...	14 0 0
Battens	10 10 0 ...	11 0 0
White Sea and Petersburg—		
First white deals, 3 in. by 11 in.	15 0 0 ...	16 0 0
» » 3 in. by 9 in.	14 0 0 ...	14 10 0
Battens	11 10 0 ...	12 10 0
Second white deals, 3in. by 11in.	14 0 0 ...	15 0 0
» » 3 in. by 9 in.	13 0 0 ...	14 0 0
Battens	10 10 0 ...	11 0 0
Pitch-pine: deals	19 0 0 ...	21 0 0
Under 2 in. thick extra	0 10 0 ...	1 0 0
Yellow Pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	»
Seconds, regular sizes	33 0 0	»
Oddments	28 0 0	»
Kauri Pine—Planks per ft. cube.	0 3 6 ...	0 5 0
Danzig and Stettin Oak Logs—		
Large, per ft. cube	0 3 0 ...	0 3 9
Small » »	0 2 6 ...	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 6 ...	0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½ ...	0 0 9½
¼ in. do. do.	0 0 7 ...	—
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch.	0 0 10 ...	0 1 1
Selected, Figury, per ft. super. as inch	0 1 6 ...	0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10 ...	0 1 0
Teak, per load	18 0 0 ...	22 0 0
American Whitewood planks, per ft. cube	0 4 0 ...	0 5 0
Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6 ...	0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0 ...	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0 ...	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0 ...	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6 ...	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0 ...	0 16 6
¼ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0 ...	0 13 6
1 in. by 7 in. » »	0 14 0 ...	0 18 6
¼ in. by 7 in. white » »	0 10 0 ...	0 11 0
1 in. by 7 in. » »	0 12 9 ...	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0 ...	7 10 0
Compound Girders, ordinary sections	9 0 0 ...	10 0 0
Steel Compound Stanchions	11 0 0 ...	12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0 ...	10 0 0
Flitch Plates	9 0 0 ...	9 10 0
Cast Iron Columns & Stanchions, including ordinary patterns	7 10 0 ...	8 10 0

METALS.

	Per ton, in London. £ s. d.	£ s. d.
IRON—		
Common Bars	8 10 0 ...	9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0 ...	9 5 0
Staffordshire "Marked Bars"	10 10 0 ...	—
Mild Steel Bars	8 15 0 ...	9 5 0
Hoop Iron, basis price	9 5 0 ...	9 10 0
» » Galvanised	17 0 0 ...	—
(*And upwards, according to size and gauge.)		
Sheet Iron Black—		
Ordinary sizes to 20 g.	9 15 0 ...	—
» » 24 g.	10 15 0 ...	—
» » 26 g.	12 5 0 ...	—
Sheet Iron, Galvanised, flat, ordinary quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0 ...	—
Ordinary sizes to 22 g. and 24 g.	15 10 0 ...	—
» » 26 g.	16 10 0 ...	—
Sheet Iron, Galvanised, flat, best quality—		
Ordinary sizes to 20 g.	18 0 0 ...	—
» » 22 g. and 24 g.	18 10 0 ...	—
» » 26 g.	20 0 0 ...	—
Galvanised Corrugated Sheets—		
Ordinary sizes, 6ft. to 8ft. 20 g.	14 10 0 ...	—
» » 22 g. and 24 g.	14 15 0 ...	—
» » 26 g.	16 5 0 ...	—

METALS (*Continued*).

IRON (*Continued*)—	Per ton, in London. £ s. d.	£ s. d.
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 0 0 ...	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 0 0 ...	—
» » » 26 g.	15 0 0 ...	—
Cut Nails, 3 in. to 6 in.	10 10 0 ...	11 0 0
(Under 3 in., usual trade extras.)		

LEAD, &c.

	£ s. d.	£ s. d.
LEAD—Sheet, English, 4lb. and up	16 7 6 ...	—
Pipe in coils	16 17 6 ...	—
Soil pipe	19 17 6 ...	—
Compo pipe	19 17 6 ...	—
ZINC—Sheet—	In casks of 10 cwt.	
Vielle Montagne	31 0 0 ...	—
Silesian	30 15 0 ...	—
Zinc, in bundles, 1s. per cwt. extra.		
COPPER—		
Strong Sheet per lb.	0 1 0 ...	—
Thin » »	0 1 1 ...	—
Copper nails »	0 0 10 ...	—
Copper wire »	0 0 10 ...	—
BRASS—		
Strong Sheet »	0 0 11 ...	—
Thin »	0 1 0 ...	—
TIN—English Ingots »	0 1 11 ...	—
SOLDER—Plumbers' »	0 0 8½ ...	—
Tinmen's »	0 0 11 ...	—
Blowpipe »	0 1 2 ..	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

Per Ft., Delivered.

15 oz. thirds	2½d.	26 oz. fourths	3½d.
» fourths	1½d.	32 oz. thirds	5½d.
21 oz. thirds	3¼d.	» fourths	4½d.
» fourths	2½d.	Fluted Sheet, 15 oz.	3½d.
23 oz. thirds	4¼d.	» 21 oz.	4½d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

Per Ft., Delivered.

⅛ Hartley's	2d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	3¼d.
3/16 »	2¼d.		
¼ »	2¾d.	Ditto, tinted	5d.

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 3 10
» » » in barrels	»	0 3 11
» » » in drums	»	0 4 1
Boiled ,, » in barrels	»	0 4 1
» » » in drums	»	0 4 4
Turpentine in barrels	»	0 4 4
» in drums	»	0 4 6
Genuine Ground English White Lead,	per ton	21 10 0
Red Lead, Dry	»	20 0 0
Best Linseed Oil Putty	per cwt.	0 11 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the prepaid rate of 19s. per annum, with delivery *by Friday Morning's Post* in London and its suburbs.

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Remittances (payable to J. MORGAN) should be addressed to The Publisher of "THE BUILDER," 4, Catherine-street, W.C.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BASINGSTOKE.—For erection of a drill hall. Messrs. Hair & Bucknill, architects, 23, Portland-terrace, Southampton:—

Jenkins & Sons	£2,390 0 0	A. J. Colborne	£2,229 11 0
J. Cockerell	2,365 0 0	J. Nichol	2,224 0 0
Kirk & Randall	2,300 0 0	Mussellwhite & Sapp	2,196 0 0
Stevens & Co.	2,280 0 0	W. A. Tigwell,	
H. Goodall	2,259 0 0	Basingstoke*	2,048 0 0
Waldron & Cox	2,248 9 8		

[Architects' protecting tender, £2,323.]

BELFAST.—For painting at Ormeau, Woodvale, Alexandra, Victoria, and Botanic Gardens Parks:—

Ormeau Park.

E. Jones, Lisburn-road, Belfast* £153 0

Botanic Gardens Park.

J. McMaster, Ormeau-road, Belfast* ... 153 0

Alexandra Park.

J. McMaster, Ormeau-road, Belfast* ... 44 0

Woodvale Park.

S. Millar, Thorndale-avenue, Belfast*... 43 10

Victoria Park.

S. Millar, Thorndale-avenue, Belfast*... 16 0

BRISTOL.—For proposed teacher's house, Bitton Council School, for Gloucestershire Education Committee. Mr. R. S. Phillips, Architect, Gloucester:—

H. F. Wren	£550 0 0	T. Broad & Sons	£425 0 0
S. Williams & Son	499 0 0	E. Walters & Son	420 17 0
S. Lovell	498 8 0	Adams & Jefferies, Oldland‡	419 0 0
H. England & Son	455 0 0		
A. G. Heard	447 9 8		

‡ Accepted with reductions.

CARLISLE.—For erection of disinfecting chambers. Mr. J. W. Benwell, architect, 28, Lowther-street, Carlisle:—

G. Black	£190 19 9	J. & R. Bell	£181 3 0
J. Laing & Son	184 2 6	J. Logan	180 11 11
W. Baty	183 18 1		

[All of Carlisle.]

CHELMSFORD.—For reslating, etc., Shire Hall. Mr. Frank Whitmore, County Architect, Chelmsford:—

T. J. Bailey	£165 3 9	J. Gowers	£154 10 0
Johnson & Hawkes	161 15 6	Potter & Son	147 0 0
Eglin & Co.	161 3 6	W. B. Simmons‡	146 15 6

[All of Chelmsford.]

‡ Recommended for acceptance.

CHELMSFORD.—For alterations and additions to the Friars Council school. Mr. W. H. Pertwee, architect, Chelmsford. Quantities by Mr. G. B. H. Low, Chelmsford:—

Eglin & Co.	£1,640	J. W. Truggett	£1,370
Mason & Son	1,520	A. H. Fryd	1,367
Smith & Son	1,497	Johnson & Hawkes	1,365
T. Burtwell	1,489	Gibson & Sons	1,354
Potter & Son	1,417	T. J. Bailey	1,344
Parren & Son	1,405	J. Rayner, East Hanningfield*	1,285
Grimwood & Sons	1,395		
Choat & Son	1,384		

CHISWICK.—For works for the District Council. Mr. Edward Willis, Engineer, Town Hall, Chiswick:—

Painting at Chiswick Isolation Hospital.

—	External Painting. £ s. d.	Internal Painting. £ s. d.	— £ s. d.
R. Lewtas	104 0 0	49 0 0	153 0 0
W. Blackburn, Chiswick*	114 11 6	76 0 0	190 11 6
O. J. Plumridge	110 16 0	94 10 0	205 6 0
W. J. Fensom	118 14 0	82 12 6	201 6 6
G. Johnson‡	—	—	44 10 0

‡ External Painting of Lodge and Laundry Block only.

Supply of Motor Mower and Roller.

—	Mower and Roller. £ s. d.	Additional Weights. £ s. d.	— £ s. d.
T. Green & Son*	160 0 0	7 10 0	167 10 0
Ransomes, Sims, & Jefferies	172 0 0	7 13 0	179 13 0
A. Shanks & Sons	208 2 6	6 0 0	214 2 6

Painting and Repairs at Holme Court Truant School.

—	Estimate No. 1. £ s. d.	Estimate No. 2. £ s. d.	— £ s. d.
A. Baker & Sons	176 4 6	9 19 6	186 4 0
W. Blackburn	129 5 0	9 15 0	139 0 0
T. A. Chapman	106 12 6	10 10 0	117 2 6
Cutler & Sons	176 0 0	31 10 0	207 10 0
H. Morgan*	127 8 0	10 0 0	137 8 0
J. & J. F. Pallant	126 5 0	11 10 0	137 15 0
O. J. Plumridge	131 7 6	15 15 0	147 2 6
Scott & Williams	198 17 6	12 10 0	211 7 6
H. Lemon	90 0 0	10 0 0	100 0 0

CORK.—For erection of cottages at Doughcloyne, Cork, for Capt. Thomas Sarsfield, J.P. Mr. Hugh W. Flanagin, architect, 2, South Mall, Cork:—

Meagher & Hayes	£540	Duggon Bros.	£420
J. Kearns	537	S. Scully, Frenches Quay, Cork*	410
P. Murphy	520		

LONDON.—For exterior repairs and painting at the Almshouses, Bayham-street, Camden Town, for the Trustees of the St. Martin-in-the-Fields Charities. Mr. A. A. Kekwick, architect, 12, Norfolk-street, Strand:—

Sabey & Sons	£486	J. Catterall	£358
R. & J. Shiers	485	A. Monk	315
J. Garlick Ltd.	370	Love & Co.*	315

LONDON.—For erection of a handicraft centre on the Heckford-street side (Limehouse) for the London County Council :—

Parrott & Isom	£1,020 0 0	C. R. Price	£709 10 0
Newell & Lusty	871 3 9	E. A. Roome & Co.	702 0 0
W. Reason	815 15 0	J. & C. Bowyer Ltd.	689 0 0
McLaughlin & Harvey, Ltd.	799 2 5	Gathercole Bros., London-road, Norbury*	654 0 0
W. Harris	782 0 0		
T. D. Leng	767 0 0		
A. E. Symes	747 0 0		

[The Architect's estimate, comparable with the tenders, is £740.]

LONDON.—For cleaning and repainting Vauxhall Bridge, for the London County Council :—

W. King & Son	£3,321 0 0
E. Proctor & Sons	3,097 19 10
Markham & Markham	3,051 0 0
Vigor & Co.	2,834 10 0
W. Dudley	2,577 12 0
A. H. Inns, Bishopsgate, E.C.*	2,198 0 0

[The estimate of the Chief Engineer comparable with the above tenders is £3,200.]

MAIDSTONE.—For erection of County Offices, for the Kent County Council :—

T. C. Gluyas	£51,196	G. H. Denne & Son	£45,790
W. T. Burrows	49,920	J. Jarvis	45,670
D. Godden & Son	48,161	Holloway Bros. (London), Ltd.	45,400
Higgs & Hill, Ltd.	47,984	West Bros.	45,240
A. N. Coles	47,510	G. E. Wallis & Son, Ltd.	44,334
J. & M. Patrick	46,500	Pethick Bros, Ltd., London and Plymouth*	43,444
C. E. Skinner	46,350		
F. & E. Davey, Ltd.	46,097		
W. Pattinson & Sons, Ltd.	45,990		
W. Johnson & Co., Ltd.	45,934		

OLDLAND.—For alterations and additions to Cadbury Heath Council School, for Gloucestershire Education Committee. Mr. R. S. Phillips, Architect, Gloucester :—

H England & Son	£1,025 0 0
Bray & Slaughter	998 0 0
S. Lovell	997 10 0
E. Walters & Son	977 0 0
Adams & Jefferies	900 0 0
A. G. Heard, Shirehampton*	834 13 11

ORSETT.—For extensions and additions to kitchen and scullery at Orsett Union Workhouse, Essex. Mr. Christopher M. Shiner, A.R.I.B.A., architect and surveyor, 10, Duke-street, Adelphi, W.C., and the Gate House, Grays, Essex :—

L. E. Brand & Sons	£104 8	G. W. Cooke	£72 0
H. J. Carter, Ltd.	79 0	Brown Bros.*	67 10
G. Brown	72 10		

PORTSMOUTH.—For erection of a tuberculin dispensary, for the Corporation of Portsmouth. Quantities not supplied :—

S. Salter	£420	South Western Building & Steam Joinery Co., Ltd., Gosport*	£290
Woods & Co.	339		
J. Tanner	309		

SHILLINGTON.—For erection of a memorial hall. Mr. J. Shilcock, architect, Hitchin :—

W. French	£1,146 2	M. Foster & Co.	£980 0
J. Willmott & Sons	1,120 0	T. Coleman & Co.	975 0
S. Redhouse & Son	1,116 0	C. Wright	940 0
F. J. Bailey & Co.	1,098 0	H. Rooke	900 0
W. J. Spratt	1,097 0		

STANFORD-LE-HOPE (Essex).—For erection of post-office, Stanford-le-Hope, Essex, for the General Property Trust. Mr. Christopher M. Shiner, A.R.I.B.A., architect and surveyor, 10, Duke-street, Adelphi, W.C., and the Gate House, Grays, Essex :—

H. J. Carter, Ltd.	£270 0	L. E. Brand & Sons	£237 10
G. W. Cooke	253 0	Brown Bros.	215 0
J. Dobson*	240 0		

STANFORD-LE-HOPE (Essex).—For alterations and additions to old mixed school, Stanford-le-Hope, Essex, for Essex Education Committee. Mr. Christopher M. Shiner, A.R.I.B.A., architect and surveyor, 10, Duke-street, Adelphi, W.C., and the Gate House, Grays, Essex. Quantities by Mr. G. Silvester, F.S.I., 10, Duke-street, Adelphi, W.C. :—

S. Squire, Ltd.	£1,548 0 9	Potter & Sons	£1,167 0 0
Stewart & Sons	1,320 0 0	G. Brown	1,148 0 0
L. E. Brand & Sons	1,279 17 11½	Hammond & Sons	1,129 0 0
J. W. Trudgett	1,235 0 0	H. J. Carter, Ltd.	1,119 0 0
Brown Bros.	1,195 0 0	J. Dobson*‡	1,016 17 8
		G. W. Cooke§	885 14 6

‡ Pitch-pine, £9 4s. § Pitch-pine, £4 12s.

STANSTED.—For new school for girls and infants, and alterations to boys' school at Stansted. Mr. Frank Whitmore, Architect, Chelmsford :—

J. H. Staines	£3,179 7 1	G. Brown	£2,911 7 4
J. W. Trudgett	3,075 0 0	Redding & Son	2,873 0 0
F. & E. Davey, Ltd.	3,066 0 0	A. H. Fryd	2,866 0 0
H. E. Ambrose	3,064 7 0	W. Bell & Sons	2,856 0 0
G. Grimwood & Sons	3,058 10 0	F. Willmott	2,826 0 0
Kidman Bros.	3,054 0 0	J. Day	2,814 0 0
H. J. Carter, Ltd.	2,990 0 0	J. L. Glasscock & Son	2,805 0 0
W. Robinson	2,946 15 5	D. Robinson, jun.	2,789 13 4
J. Parren & Son	2,932 9 0	Clark & Sons, Cambridge ‡	2,612 0 0

[Architect's estimate, £2,760.]
‡ Recommended for acceptance.

STRATFORD.—For internal and external painting, Stratford Court House. Mr. Frank Whitmore, County Architect, Chelmsford :—

H. C. Horswill	£219	A. E. Symes, Stratford‡	£177
A. Webb	214		
H. J. Carter	180		

‡ Recommended for acceptance.

TILBURY DOCK.—For alterations and additions to Constitutional Club, Tilbury Dock, Essex. Mr. Christopher M. Shiner, A.R.I.B.A., architect and surveyor, 10, Duke-street, Adelphi, W.C., and the Gate House, Grays, Essex :—

Brown Bros.	£155 0	H. J. Carter, Ltd., Grays*	£112 0
G. Brown	117 10		

UPWELL (Wisbech).—For Baptist Sunday School. Mr. W. H. Davis, architect, 2, York-row, Wisbech :—
Messrs. Elworthy & Co., Upwell* £250
[With deductions.]

WATFORD.—For St. Albans-road International Stores. Messrs. George Baines & Son, architects, 5, Clement's Inn, Strand, London, W.C. :—

Bainbridge & Son	£641 0 0	G. Wiggs & Son	£521 0 0
Brightman & Son	533 15 0	Makey & Son	516 0 0
G. S. Lewis & Bros.	522 17 6	Clark Bros.	495 2 6
H. Knock	522 13 0	W. King & Sons*	480 12 0

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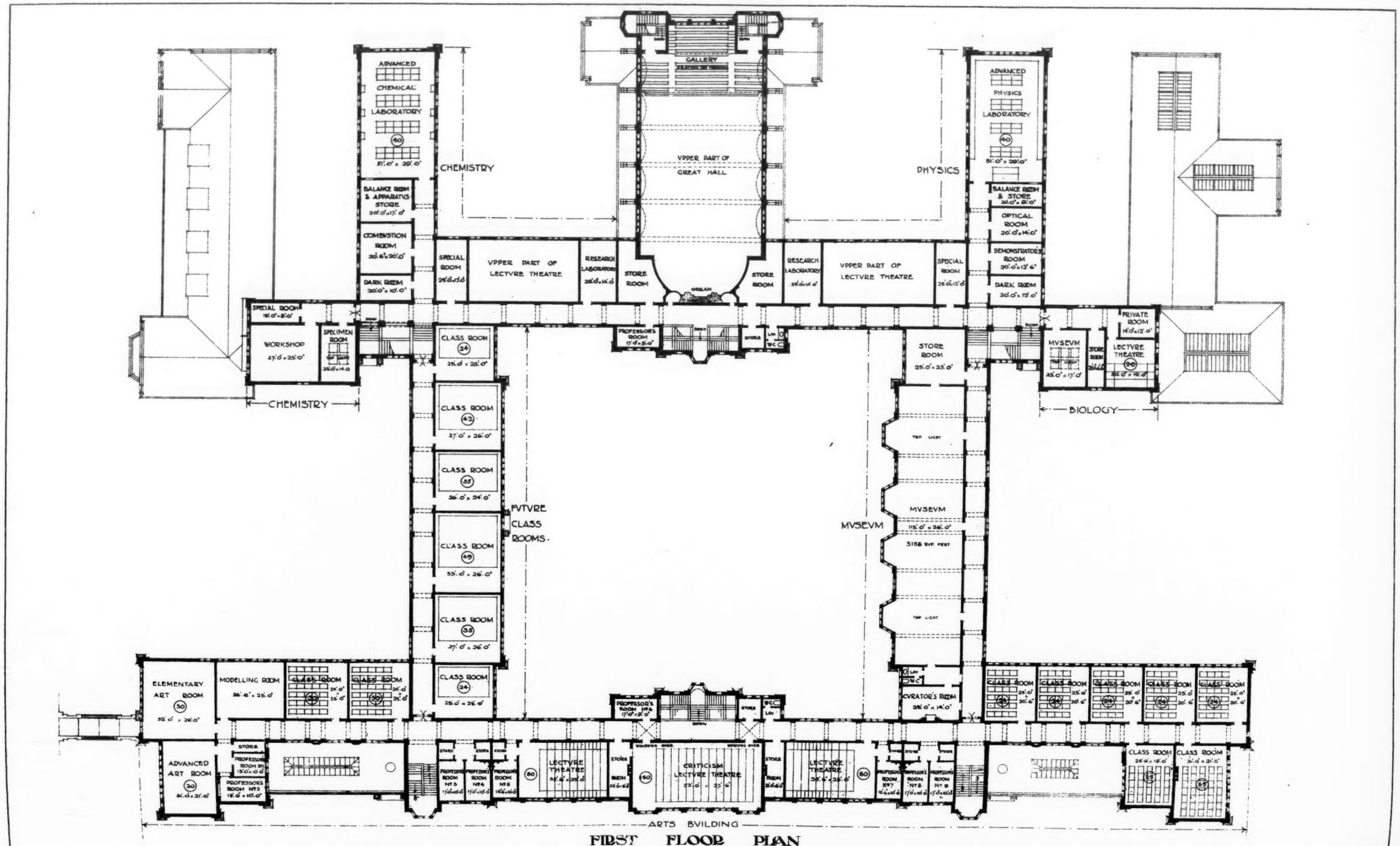

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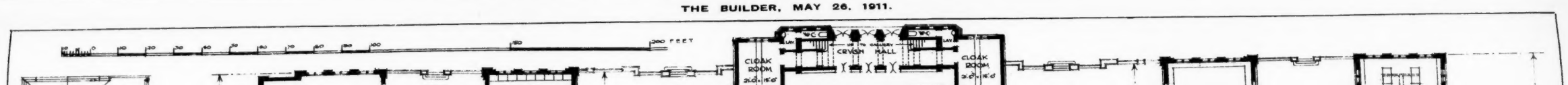

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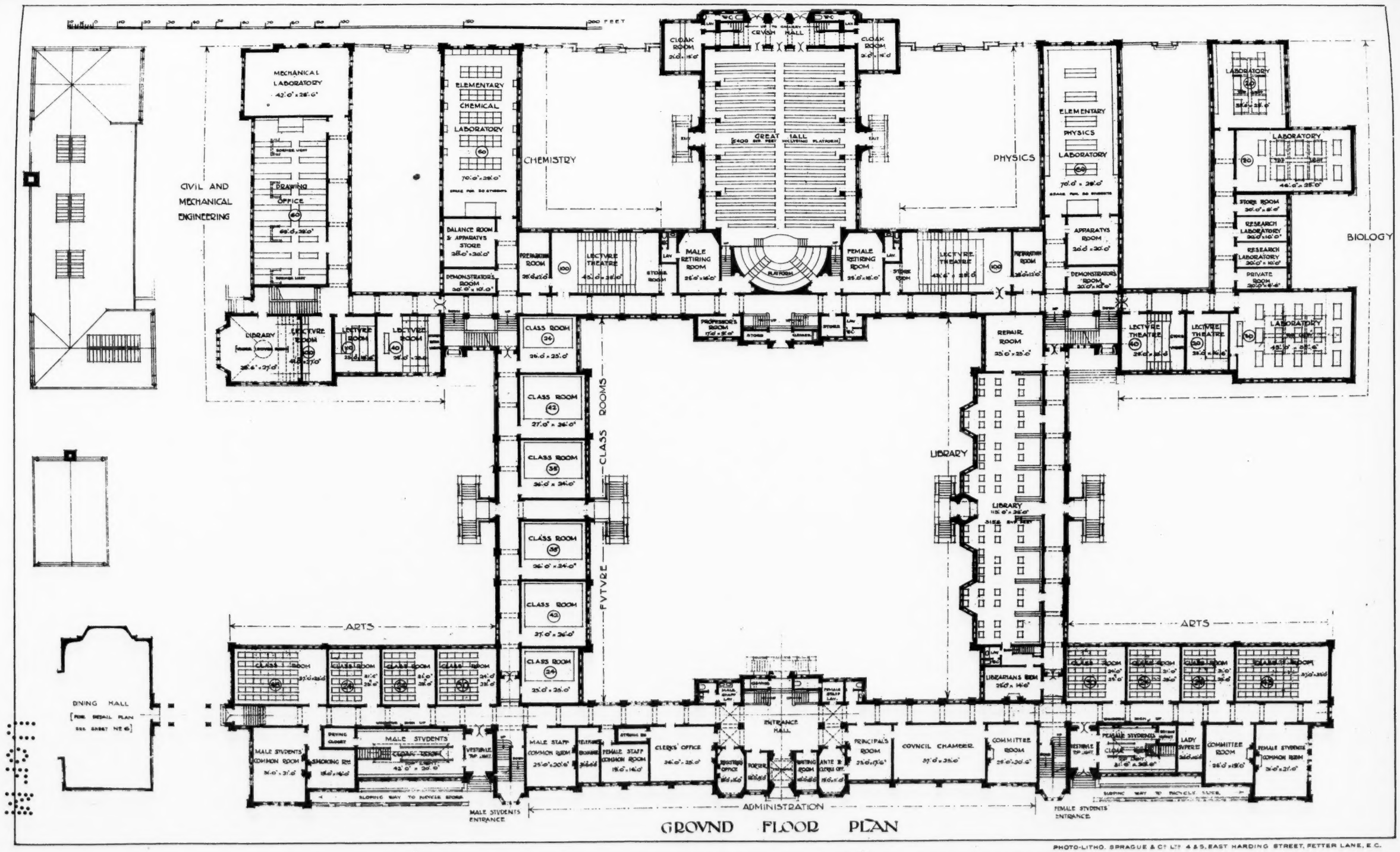

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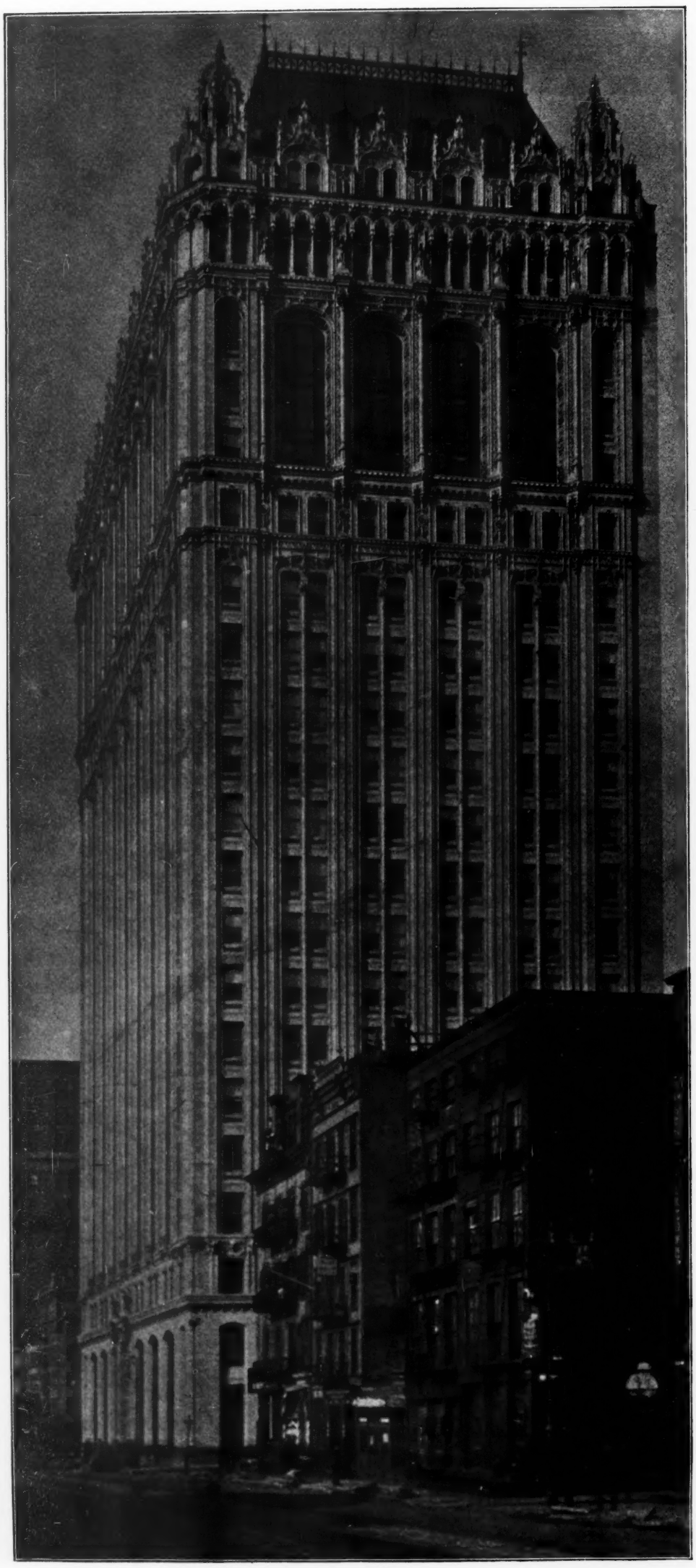

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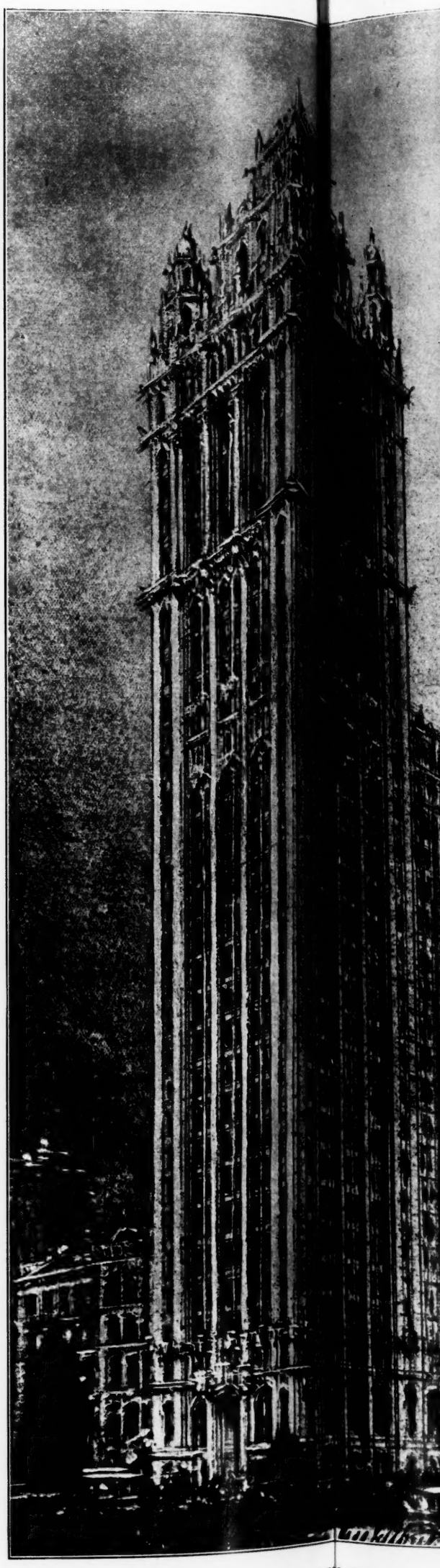

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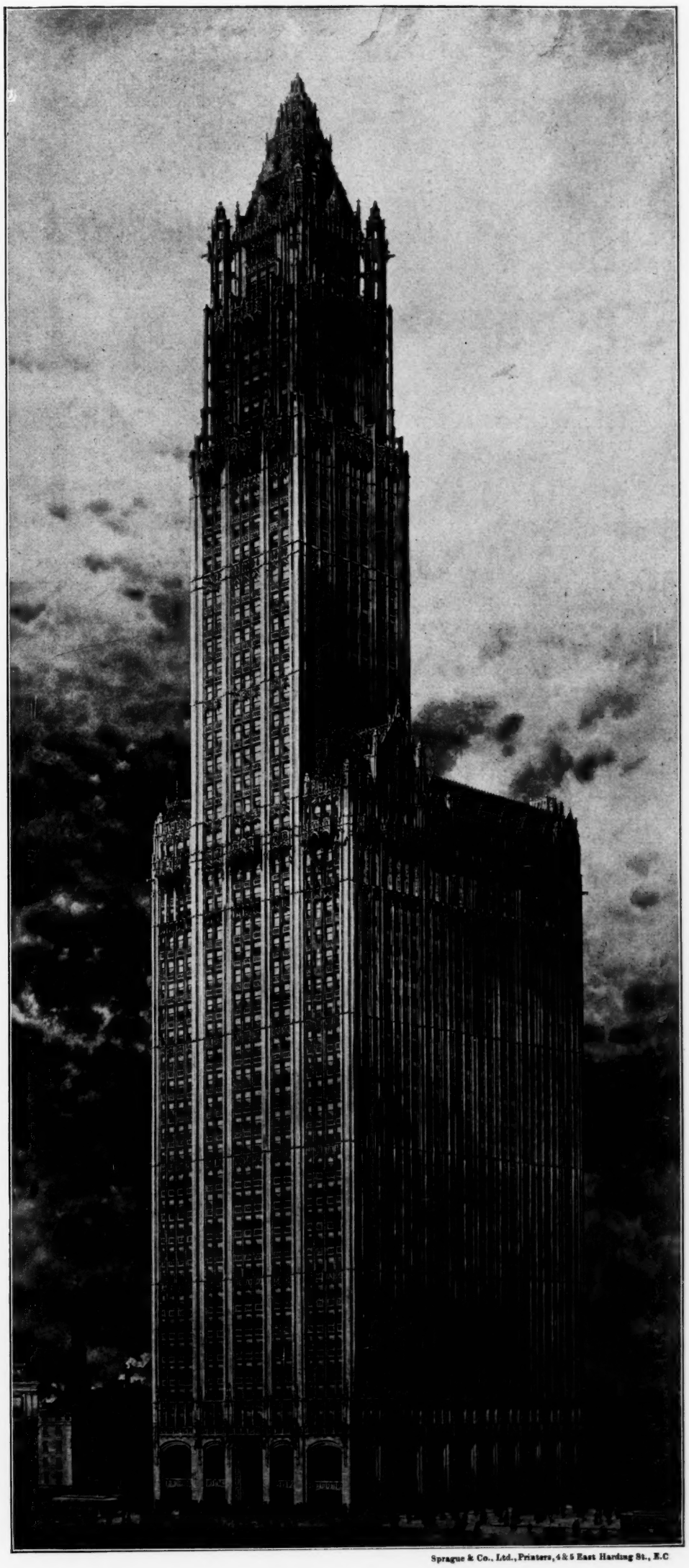

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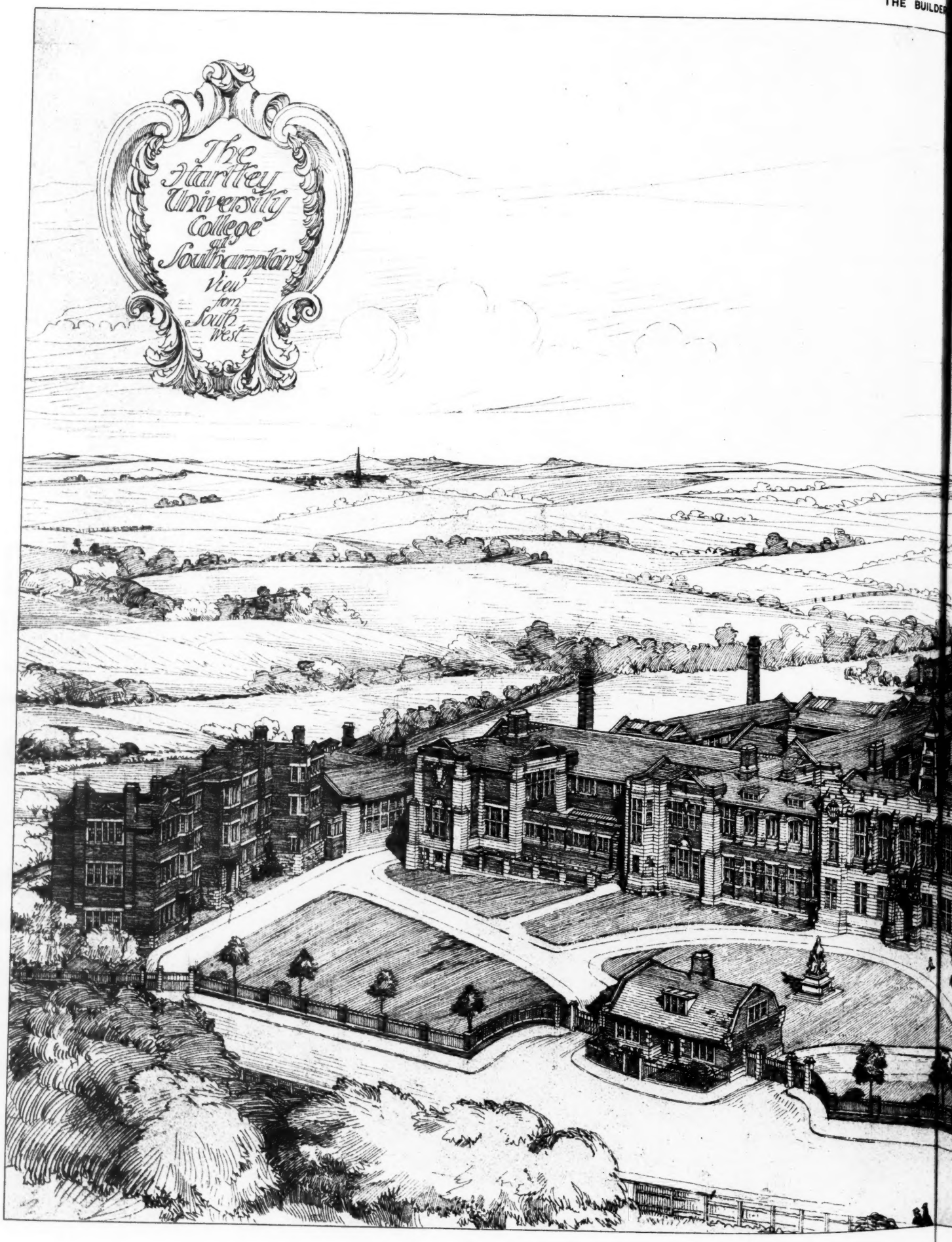

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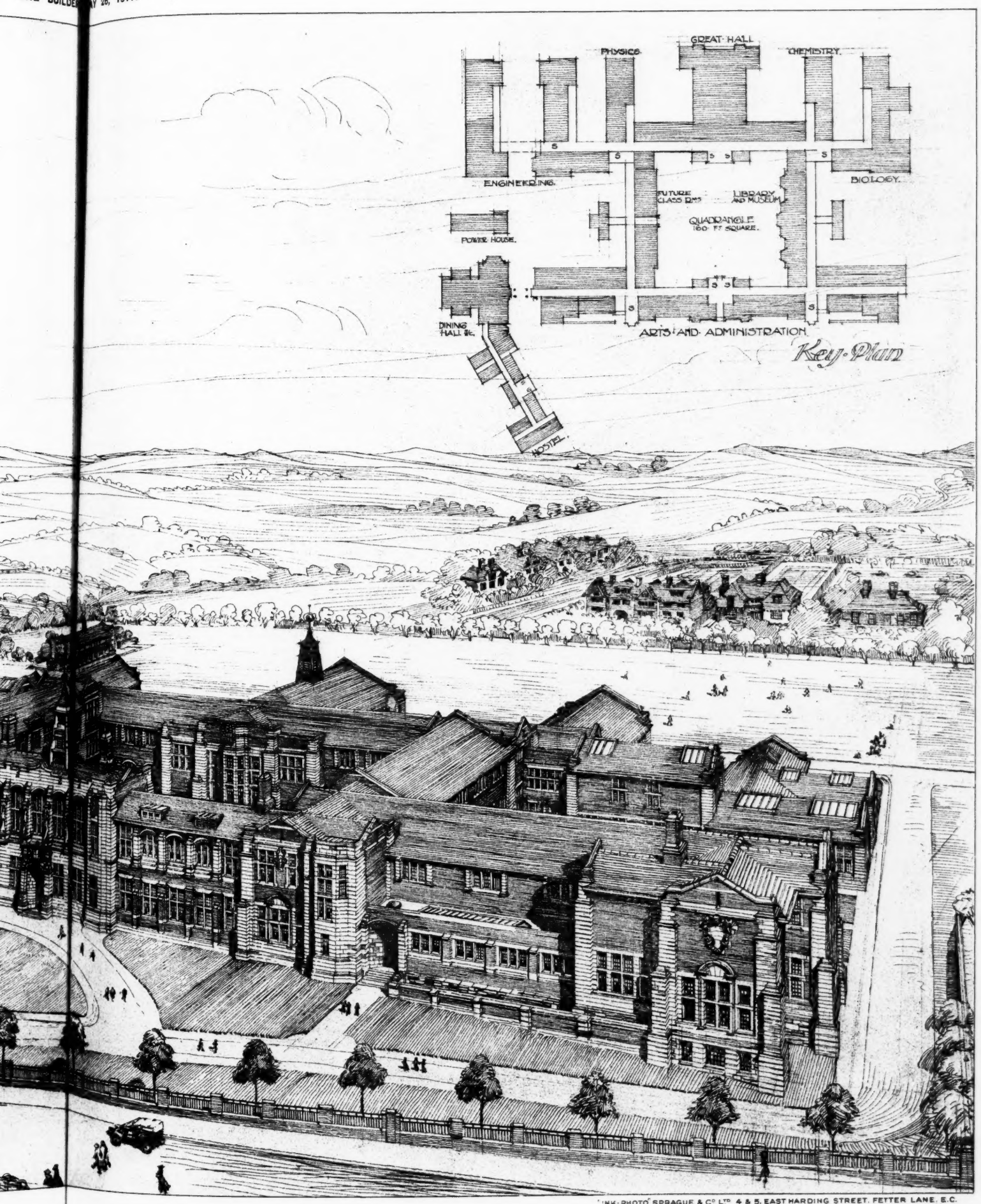

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